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U.S. EPA REGION 5

April 9, 2010

United States Environmental Protection Agency -Region 5
ATTN: Mr. Joseph Ulfig - Air and Radiation Division
77 West Jackson Boulevard
Chicago, IL 60604-3590

Re: Winnebago Landfill Facility
Notice of Violation
Response Letter

Dear Mr. Ulfig:

On behalf of Winnebago Reclamation Service (WRS), Shaw Environmental, Inc. (Shaw) is providing the following information in response to the additional information requested during the March 9, 2010 conference between WRS and the USEPA. This submittal also includes a response to each of the alleged violations detailed in the Notice and Finding of Violation (NOV) received via certified mail on February 8, 2010. Presented below are the USEPA alleged violations (cited by Item No. number within the NOV) followed by WRS's responses. An original and two (2) copies of this submittal are provided.

Item No. 24:

"In January of 2010, IEPA notified U.S. EPA that it had received numerous citizen complaints concerning odor from residents in the area near WRS."

WRS Response

WRS has an odor management plan in place that is an active part of our operations. The odor management plan includes procedures for managing odors associated with active placement of waste and managing odors associated with landfill gas. This includes the installation of an active gas collection and control system (GCCS) in the North and South Units and placement of cover soils to ensure effective control of fugitive landfill gas emissions. The installation of the GCCS was done in advance of any regulatory or permit requirement. WRS utilizes specific cover soils including agricultural lime and compost which have been proven to be effective in neutralizing hydrogen sulfide and reducing fugitive emissions of landfill gas. Further, WRS has placed low permeability clay soils over areas in which the GCCS is less efficient which typically occurs at the outside edge of the landfill unit. WRS performs routine monitoring and maintenance of the GCCS and cover soils to ensure they are achieving the desired results.

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Item No. 25:

On July 24, 2009, WRS reported to IEPA that landfill gas samples taken in June 2009 showed that concentrations of total reduced sulfur compounds were present at concentrations of 2,600 and 2,371 ppm.

<u>WRS Response</u>

Although not required by permit, WRS sampled untreated landfill gas from the waste mass. These samples do not represent emissions from the landfill.

Item No. 30:

"By failing to continuously operate the equipment used to control the landfill gas, WRS is in violation of Title V Operating Permit Conditions 7.1.3(c)(ii)(C and D), and 40 C.F.R. § 60.752(b)(2)(iii and iv)."

<u>WRS Response</u>

A summary of the 84 control equipment shutdown events, as well as the causes and corrective actions taken for each shutdown event are presented on **Table Nos. 1, 2, and 3** provided in **Attachment 1**. **Table 1** shows that prior to the Winnebago Energy Center (WEC) being online during Year 2007, shutdown events were due to:

- Scheduled maintenance of either the GCCS or the flares – representing **67.6%** of the 2007 events,
- Equipment malfunction – representing **20.6%** of the 2007 events, and
- Power outages – representing **12%** of the 2007 events.

Beginning in 2008 when the WEC was operational and online, shutdown events were due to:

- WEC outages – representing **74%** of the 2008-09 events,
- Power outages – representing **14%** of the 2008-09 events,
- GCCS maintenance – representing **8%** of the 2008-09 events, and
- Equipment malfunction – representing **4%** of the 2008-09 events.

WEC outages during 2008 and 2009 were typically the result of unscheduled engine malfunction protective shutdowns (i.e., low oil pressure, cold cylinder, switch gear failure, etc.); ComEd outages or repairs; or weather related impacts (i.e., lightning or freezing temperatures).

Please note that at all times during the above cited shutdown events, good air pollution control practices were followed and there were no uncontrolled emissions or free venting of gas to the atmosphere from the shutdown events.

The control device equipment at the WRS Landfill is designed to operate 24 hours per day, 365 days per year. However, no matter how well designed the equipment is at any landfill, there will be times when shutdowns are required for routine/scheduled preventative maintenance and unscheduled service/repairs. Some shutdowns are short duration lasting 1 to 3 hours, while others may involve repair, replacement or rebuilding key equipment that could require several hours to several days. The GCCS at any landfill requires constant monitoring, balancing, tuning and maintenance/servicing to optimize the capture of landfill gas. Ongoing adjustments to the GCCS are required to balance between maximum gas collection, optimum gas quality, and minimum air emissions. The landfill operator must be careful not to "over-draw" the system in its efforts to maximize gas recovery / combustion, and to minimize fugitive gas emissions. Over-drawing the system can potentially result in detrimental effects to the landfill (e.g., landfill fires) and the GCCS (e.g., poor energy recovery and combustion, equipment malfunctions). Additionally, frequent adjustments to the GCCS are necessary due to changes in ambient weather conditions (i.e., temperature change and/or barometric change) — with again consideration to good gas quality, optimum recovery/combustion, and minimum gas emissions.

NSPS 1-Hour/5-Day Downtime Provision. The New Source Performance Standards (NSPS) compliance provisions for municipal solid waste landfills in accordance with Title 40 CFR §60.755(e) of subpart WWW state that the emission standards apply at all times, except:

> *". . . during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction shall not exceed 5 days for collection systems and shall not exceed 1 hour for treatment or control devices."*

The industry-wide interpretation of the above 1-hour / 5-day downtime provision is that the control equipment (i.e. - flare) cannot be down for more than 1-hour at a time while the collection system is running in a manner that allows uncontrolled venting of LFG to the atmosphere; and the collection system cannot be down for more than 5 days at a time.

Proposed Amendment to NSPS Downtime Provision. In USEPA's proposed amendments to the above NSPS provision (as published in the Federal Register, Volume 71, No. 174, IV.A, issued September 8, 2006), the USEPA states that at the time it developed the 1-hour and 5-day provision:

> *". . . we believed that malfunctions could be corrected within these time frames. Since promulgation of the Landfills NSPS, we have learned that many malfunctions cannot be corrected within these time limits . . . we conclude that the 1-hour and the 5-day time limitations are not feasible and should be changed . . ."*

> *"The Landfills NSPS also has no allowance for shutdown of collection, control, or treatment systems for routine preventive maintenance. Periodic maintenance is needed to provide continued good operation of the gas collection and control systems and to avoid malfunctions, but shutdowns for maintenance could result in a violation. This issue arises because of the unique nature of landfills. Most NSPS regulate manufacturing processes that can be stopped when a control device needs to be maintained or repaired. For example, chemical plants typically shut down their processes on a regular schedule (e.g., for 1 week each year) and maintain their control devices at the same time, when no emissions are being generated from the production process. Landfills are a biological process, and once waste is deposited in the landfill, gas is continuously generated and cannot be stopped. Routine control device maintenance procedures often cannot be completed in 1 hour, and some types of maintenance take days. Therefore, we propose to amend 40 CFR 60.755(e) of subpart WWW to remove the 1-hour and 5-day time limits on SSM events, and to allow routine maintenance of collection, control, and treatment systems. The proposed amendments also clarify that the NSPS General Provisions in 40 CFR 60.11(d) of subpart A continue to apply during maintenance and malfunctions, and that routine maintenance activities must be completed and malfunctions must be corrected as soon as practicable after their occurrence in order to minimize emissions. To prevent free venting of landfill gas to the atmosphere during control device malfunctions or maintenance, we propose to retain the current requirement in 40 CFR 60.753(e) of subpart WWW. This section requires that in the event the collection or control system is inoperable, the gas mover system must be shut down and all valves in the collection and control system contributing to venting of gas to the atmosphere must be closed within 1 hour."*

All of WRS' shutdowns complied with USEPA's proposed amended NSPS provision; specifically, whenever a control device was shut down, the gas mover system was also shut down and the block valve (controlling the flow of gas to the control device) was closed automatically — so that venting of gas to the atmosphere did not occur.

SWANA / NSWMA Response to NSPS Downtime Provision. In a letter dated November 7, 2007 to the USEPA, the Solid Waste Association of North America (SWANA) and the National Solid Wastes Management Association (NSWMA) state that a GCCS often cannot be reasonably brought back on-line after an shutdown event in less than one hour, and that during most downtime events it could take multiple days to return the GCCS to operating condition. SWANA and NSWMA further state that they support the USEPA's decision to clearly define that the 1-hour threshold should only be applied to free venting of landfill gas after a control device goes off-line and before the gas mover equipment can be shutdown to prevent untreated gas from passing through the control device. A copy of this letter is provided in **Attachment 2** (refer to pages 6-7 of this letter).

In the "Landfill Gas Operation and Maintenance Manual of Practice" published by SWANA in 1998, procedural guidelines provided for shutdown events (planned and unplanned) and troubleshooting measures for these events — specifically indicate that shutdown events are within normal operational tolerances.

WRS' Response to Minimize SSM Events/Durations. In an effort to minimize start-up, shutdown, or malfunction (SSM) events and to minimize downtime durations, WRS has taken the following steps:

- Performed a root cause analysis of the 84 SSM events, determined that the WEC was the main cause of the events.
- WRS has discussed the permit status of relocating the flares with the Illinois EPA to ensure that modifications to the control device are appropriately permitted prior to initiating the work.
- WRs has started engineering and construction planning process to ensure that the piping and instrumentation (PID) plans are completed and ready at the time the Illinois EPA issues a construction permit. The PID will detail an automated system to ensure that downtime events for the landfill gas control devices are minimized.
- Developed and implemented a Preventative Maintenance Plan to follow a more rigid schedule for maintenance activities thereby minimizing the occurrence of unplanned SSM events.

Item No. 31:

"By emitting sulfur dioxide in excess of 1.24 pounds per hour from the North Flare, WRS is in violation of Title V Operating Permit Condition 7.1.6(a)."

WRS Response

Data prepared by RK & Associates, Inc. demonstrates that emissions of sulfur dioxide did not exceed 1.24 pounds per hour from the North Flare at any point during flare operation, and therefore did not violate the emission limitations specified by the Title V Operating Permit Condition 7.1.6(a). A copy of the data prepared by RK & Associates is provided in **Attachment 3**.

Item No. 32:

"By having landfill gas control device start-up, shut-down, or malfunction events longer than one hour, WRS is in violation of Title V Operating Permit Condition 7.1.8(b)(iii), and 40 C.F.R. § 60.755 (e)."

WRS Response

Please see the response made to Item No. 30 on the previous pages.

Item No. 33:

"By failing to have data for the gas flow to the South Flare for ten hours on January 4, 2007, WRS is in violation of Conditions 7.1.8(a)(i)(A) and 7.1.8(b)(iv)(C)(2)(I) of its Title V Operating permit, 35 IAC 201.281, and 40 C.F.R. § 60.756(c)(2)(i)."

WRS Response

The missing gas flow data on January 4, 2004 was caused by a tripped electrical breaker, to which the datalogger was connected. The landfill gas control equipment was not connected to the breaker, and therefore continued to operate while the datalogger was shut down. The breaker for the datalogger has since been modified so that the problem will no longer occur. No further occurrences of this type have happened since the submittal of the self-reported event.

Item No. 34:

"By failing to operate the landfill gas control system for periods greater than one hour, WRS is in violation of Condition 7.1.8(b)(iii) of WRS Title V Operating Permit and 40 C.F.R. § 60.755(e)."

WRS Response

Please see the response made to Item No. 30 on the previous pages.

Item No. 35:

"By failing to report well field exceedances to IEPA within 30 days in 2007, WRS is in violation of Condition 7.1.10 of WRS Title V Operating Permit and 39.5(7)(f)(ii) of the Act."

WRS Response

A single well field exceedance for oxygen at gas extraction well GW-102 occurred during the Summer of 2007. This exceedance was self-reported, however not within the regulatory time period. WRS has since modified it's reporting procedures and has included additional employee training to ensure compliance with all applicable reporting requirements.

Item No. 36:

"By failing to operate the landfill gas control system in durations greater than one hour 84 times and using construction and demolition aggregate for daily cover, U.S. EPA has determined that WRS has failed to maintain and operate any affected facility, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. This is a violation of 40 C.F.R. § 60.11(d)."

<u>WRS Response</u>

WRS has reviewed the shutdown events and summarized them in **Attachment 1** for 2008 and 2009 which represents the time period after the start of the WEC operations. Approximately 86% of all of the control device outages are associated with the North Unit control device. The North Unit is a closed landfill with a composite cover system consisting of:

- 1 foot of low permeability clay,
- 40-mil LLDPE geomembrane,
- Geocomposite drainage net,
- 3 feet of protective soil, and
- Good vegetative cover.

The potential for fugitive emissions associated with a control device outage associated with the North Unit is minimal. The remaining 14% of the outages are associated with the South unit. Only 3 of the South Unit outages were for a period of greater than 3.5 hours. WRS acknowledges that developing automated startup of the flares during outages at the WEC can further minimize the potential for fugitive emissions. WRS respectfully disagrees that the referenced number of outages is sufficient justification for alleging that the facility was not operated in a manner consistent with good air pollution control practice. A review of the outages indicates that the time period during which the potential for fugitive emissions existed is consistent with good air pollution control practice. WRS has been proactive in operating the facility in a manner consistent with good air pollution control practice as evidenced by the following actions which were performed to ensure that potential emissions were minimized:

- Received a construction permit from the Illinois EPA for a revised gas collection system that includes the installation of temporary horizontal gas collection systems to ensure control of landfill gas during the active operations of the landfill;
- Installed additional vertical LFG extraction wells to increase gas recovery;
- Added agricultural lime (AG lime) to the intermediate cover — specifically designed to minimize odor emissions from the landfill including H_2S and organic mercaptans (refer to articles included in **Attachment 4** supporting the effectiveness of AG lime in reducing odor emissions);
- Added compost to the intermediate cover to further minimize odors from the landfill;
- Developed and implemented an SSM Plan including periodic revisions to the SSM plan;
- Implemented additional and ongoing operator training emphasizing good air pollution control practices; and
- Accelerated the closure and installation of the final cover of the South Unit.

WRS has and will continue to conduct its operations in a manner consistent with good air pollution control practice, including the design, early installation, and operation of the gas collection systems, in a manner that exceeds the goals (either expressed or implied) in any applicable regulation or permit condition.

Item No. 37:

"By emitting sulfur dioxide from the South Flare at rates greater than 0.40 pounds per hour, WRS is in violation of Condition 1.b.iii of Construction Permit No. 04120073."

<u>WRS Response</u>

WRS self notified the Illinois EPA that it was not in compliance with the applicable emission limits within the construction permit for the South Flare on July 24, 2009. On July 31, 2009, WRS submitted a permit application to the IEPA to revise the sulfur dioxide (SO_2) emissions limit. The revised construction permit is currently under review by the Illinois EPA and upon issuance will ensure compliance with the future emissions.

Item No. 38:

"By causing, threatening, or allowing the discharge or emission of any contaminant into the environment in any State so as, either alone or in combination with contaminants from other sources, to cause or tend to cause air pollution in Illinois, WRS is in violation of 35 IAC § 201.141."

<u>WRS Response</u>

Please note that during SSM events at the WRS Landfill, a block valve automatically closes to shut off the flow of landfill gas to the control equipment (i.e.,flare) — preventing the release of landfill gas to the atmosphere. Because of this feature, there were no uncontrolled emissions / no free venting of gas to the atmosphere from the above cited SSM events.

Please see the response made to Item No. 30 on the previous pages.

Item No. 39:

"By emitting greater than 2,000 ppm of sulfur dioxide from its flares, WRS is in violation of 35 IAC § 214.301."

<u>WRS Response</u>

An analysis of the flare emissions was conducted by RK & Associates, Inc. using conservative combustion equations. The results of this analysis show the following:

- The concentration of SO_2 in the flare exhaust gases at 20% excess air is approximately 630-ppm$_v$ which is significantly below the regulatory limit of 2000-ppm$_v$; and
- At stoichiometric combustion conditions, the estimated concentration of SO_2 is approximately 735-ppm$_v$, which is also significantly less than the regulatory limit.

WRS has respectfully requested a review of the demonstration regarding the concentration based emission limits. The demonstration was provided to the USEPA during the March 9, 2010 conference. A copy of the demonstration is provided in **Attachment 3**.

Item No. 40:

"WRS's violation of its Title V Operating Permit, its Construction Permit, and the SIP constitutes violation of section 502 of the CAA and 40 C.F.R. § 70.7(b)."

<u>WRS Response</u>

WRS has acted responsibly to manage the landfill facility in accordance with all applicable laws and permit conditions. The following paragraphs present our response and actions taken to the alleged violations — organized by the following items:

- SSM Event Durations,
- Sulfur Dioxide Emissions,
- Gas Flow Data Recordkeeping,
- Timely Reporting (Deviation Reports),
- Good Air Pollution Control Practices, and
- Facility Design and Operational Information.

SSM Event Durations. The industry-wide interpretation of the NSPS 1-hour / 5-day downtime provision is that the control equipment (i.e. - flare) cannot be down for more than 1-hour at a time while the collection system is running in a manner that allows uncontrolled venting of LFG to the atmosphere; and the collection system cannot be down for more than 5 days at a time. All of WRS' shutdowns complied with this industry-wide accepted interpretation of the NSPS provision, as well as with the USEPA's proposed amendment to the NSPS provision. Specifically, whenever a control device was shut down, the gas mover system was also shut down and the block valve (controlling the flow of gas to the control device) was closed automatically well before the 1-hour time limit — so that venting of gas to the atmosphere did not occur.

A summary of the WRS control equipment SSM events, as well as the causes and corrective actions taken for each SSM event are provided on **Table Nos. 1, 2, and 3** contained in **Attachment 1**. **Table 1** shows that prior to the WEC being online during Year 2007, approximately 80% of the SSM events were due to routine/scheduled maintenance or power outages; and approximately 20% were due to flare equipment malfunction. Beginning in 2008 when the WEC was operational and online, 96% of the SSM events were due to routine/scheduled maintenance, power outage or WEC outage; and only 4% were due to flare equipment malfunction. As can be seen from the tables contained in **Attachment 1**, WRS has made significant strides in minimizing the occurrence of SSM events due to flare equipment malfunction.

Sulfur Dioxide Emissions. Data assembled and analyzed by RK & Associates, Inc. (contained in **Attachment 3**) demonstrate the following:

- SO_2 emissions did not exceed 1.24 pounds per hour from the North Flare at any point during flare operation, and therefore did not violate the emission limitations specified by the Title V Operating Permit Condition 7.1.6(a);
- The SO_2 concentration in the flare exhaust gases at 20% excess air is approximately 630-ppm$_v$ — significantly less than the regulatory limit of 2000-ppm$_v$, and therefore in compliance with the emission limitations of 35 IAC § 214.301; and
- At stoichiometric combustion conditions, the estimated SO_2 concentration is approximately 735-ppm$_v$, — significantly less than the regulatory limit of 2000- ppm$_v$, and therefore in compliance with the emission limitations of 35 IAC § 214.301.

On July 31, 2009, WRS submitted a permit application to the IEPA to increase the sulfur dioxide (SO_2) emissions limit. Specifically, the permit application (currently being negotiated with the IEPA) requested the SO_2 emissions limit be revised which will comply with the applicable state and federal regulations.

Gas Flow Data Recordkeeping. The missing gas flow data on January 4, 2004 was caused by a tripped electrical breaker to which the datalogger was connected. The landfill gas control equipment was not connected to the breaker, and therefore continued to operate while the datalogger was shut down. The breaker for the datalogger has since been modified so that this problem will no longer occur.

Timely Reporting (Deviation Reports). WRS has modified it's reporting procedures to ensure compliance with all applicable reporting requirements, and has been submitting its required monthly deviation reports in a timely manner since the Summer of 2007.

Good Air Pollution Control Practices. WRS has taken the following steps to improve good air pollution control practices and to minimize fugitive air emissions:

- Ceased acceptance of processed C&D wastes in the South Unit as of October 2008;
- Received a construction permit on January 24, 2008 from the Illinois EPA for a revised gas collection system that includes the installation of temporary horizontal gas collection systems to ensure control of landfill gas during the active operations of the landfill;
- Installed in an expeditious manner additional vertical LFG extraction wells to increase gas recovery;
- Used agricultural lime (AG lime) for daily and intermediate cover — specifically designed to minimize odor emissions from the landfill including H_2S and organic mercaptans;
- Used compost in daily and intermediate cover to further minimize fugitive emissions and odors from the landfill;
- Developed and implemented an SSM Plan to identify and implement efficient response to various SSM scenarios;
- Developed and implemented a Preventative Maintenance Plan to follow a more rigid schedule for maintenance activities thereby minimizing the occurrence of unplanned SSM events;
- Developed and implemented an Odor Control Plan to manage potential odors / sources associated with the facility;
- Implemented additional and ongoing operator training emphasizing good air pollution control practices;
- Automated the flare system start-up during a WEC engine shutdown; and
- Implemented the accelerated closure of the South Unit with final cover installation currently underway.

Facility Design and Operational Information. During a meeting held on March 9, 2010 with USEPA and WRS — the USEPA requested the following information:

- Modified GCCS design and as-builts,
- Accelerated Closure Plan (final cover),
- Special Waste Acceptance Plan, and
- Review of material types received during the operating life of the South Unit.

A brief discussion of the above design and operational features is presented below.

The GCCS design was modified to include the installation of four (4) additional gas extraction wells in the northern portion of the South Unit, and the relocation of the north utility flare. The area where the 4 additional LFG extraction wells were installed coincides with the former C&D disposal area — the same area contributing to the excessive production of H_2S gas. The north utility flare will be relocated to an area immediately east and adjacent to the WEC. The relocation is planned for later this year and will facilitate the automation of flare startups in the event of a WEC outage. A copy of the modified GCCS design and as-built drawings are contained in **Attachments 5 and 6,** respectively.

The accelerated closure plan calls for the accelerated closure of the South Unit — specifically, moving up the schedule for the final cover system installation to this year. Final cover is currently being installed on the northern portion of the South Unit, with installation scheduled for 2011 for the south portion of this Unit. The final cover system includes a low permeable clay soil cap underlain by a LLDPE geomembrane to minimize the potential for fugitive gas emissions. Further, the low permeability of the final cover combined with the design drainage slopes promote drainage of surface water away from the landfill — thereby minimizing surface water infiltration that could otherwise accelerate gas production. A copy of the final cover phasing plan drawing is contained in **Attachment 7.**

The Special Waste Acceptance Plan (SWAP) outlines specific procedures and training on recognition and proper handling of special wastes. The SWAP includes the following sections:

- Types of wastes authorized for acceptance at the facility and proper manifesting of these authorized wastes;
- Types of wastes not authorized for acceptance and how to recognize these wastes;
- Procedures for load checking and rejecting unauthorized wastes;
- Proper handling procedures for rejected loads; and
- Recordkeeping procedures for rejected loads / unauthorized wastes.

A copy of the modified SWAP is contained in **Attachment 8**.

A review of the waste streams accepted at the South Unit indicates that processed construction and demolition debris (CDD) is the only waste material accepted for disposal at the South Unit that could be a significant source of leachable sulfur. There are other waste streams which could contribute to the overall leachable sulfur such as drywall, papermill sludge and unprocessed CDD. However, the quantity or the characteristics such as particle size would inhibit either the rate or the quantity of sulfur available for reduction to H2S. The processed CDD is identified as material type 27 under the listed cover materials and was first accepted for use as a alternate cover material in 2006. General observations at other landfill facilities throughout the U.S. indicate that H_2S generation usually is noticeable approximately 1-1/2 to 2 years after accepting material that has high leachable sulfur content. This is consistent with observations from landfill personal which indicates that H_2S odors were not prevalent at the South Unit until late 2007 or early 2008.

The total amount of processed CDD accepted at the South Unit is 230,277 tons which is approximately 6% of the total waste stream. A table of material types showing the various waste streams accepted for disposal is included in **Attachment 9**.

Conclusion

The responses provided on the previous pages to the alleged NOV/FOVs demonstrate that WRS has taken significant steps to correct any design or operational issues, and to operate in the future in an environmental compliant and sound manner to comply with all applicable rules and regulations.

If you should have any questions, please contact Mr. Thomas Hilbert at 815/963-7516.

Very truly yours,

Shaw Environmental, Inc.

Jesse P. Varsho

Jesse Varsho, P.E., P.G.

Enc.: Attachments

LIST OF ATTACHMENTS

ATTACHMENT 1 – Summary Table of 84 SSM Events

ATTACHMENT 2 – SWANA / NSWMA Letter

ATTACHMENT 3 – RK & Associates' Analysis

ATTACHMENT 4 – Articles on AG Lime

ATTACHMENT 5 – GCCS Plan Drawing

ATTACHMENT 6 – GCCS As-Built

ATTACHMENT 7 – Final Cover Phasing Plan

ATTACHMENT 8 – Special Waste Acceptance Plan

ATTACHMENT 9 – Accepted Waste Streams

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ATTACHMENT 1

Summary Tables of 84 SSM Events

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TABLE 1
WINNEBAGO RECLAMATION SERVICE LANDFILL
LFG FLARE SHUTDOWN EVENTS: 2007-2009

North Flare						
	Pre-WEC		Post-WEC			
Event	2007	Event %	2008	2009	Event %	Total
WEC Outage	0	0.00%	18	16	79.07%	**34**
Flare Maintenance	4	20.00%	0	0	0.00%	**4**
GCCS Maintenance	9	45.00%	0	2	4.65%	**11**
Malfunction	5	25.00%	0	1	2.33%	**6**
Other	2	10.00%	5	1	13.95%	**8**
Totals	**20**	**100.00%**	**23**	**20**	**100.00%**	**63**

South Flare						
	Pre-WEC		Post-WEC			
Event	2007	Event %	2008	2009	Event %	Total
WEC Outage	0	0.00%	3	0	42.86%	**3**
Flare Maintenance	1	7.14%	0	0	0.00%	**1**
GCCS Maintenance	9	64.29%	2	0	28.57%	**11**
Malfunction	2	14.29%	0	1	14.29%	**3**
Other	2	14.29%	1	0	14.29%	**3**
Totals	**14**	**100.00%**	**6**	**1**	**100.00%**	**21**

COMBINED TOTAL						
	Pre-WEC		Post-WEC			
Event	2007	Event %	2008	2009	Event %	Total
WEC Outage	0	0.00%	21	16	74.00%	**37**
Flare Maintenance	5	14.71%	0	0	0.00%	**5**
GCCS Maintenance	18	52.94%	2	2	8.00%	**22**
Malfunction	7	20.59%	0	2	4.00%	**9**
Other	4	11.76%	6	1	14.00%	**11**
Totals	**34**	**100.00%**	**29**	**21**	**100.00%**	**84**

TABLE 2

WINNEBAGO RECLAMATION SERVICE LANDFILL

NORTH LFG FLARE DOWNTIME EVENTS: 2007-2009

	Date	Duration (hrs)	Reason for Downtime	Code	SSM>3 hrs.	SSM<3 hrs.	Flare Maintenance	GCCS Maintenance	WEC Outage	Malfunction	Other
2007	1/4/2007	17.5	Power outage	1	1						1
	2/22/2007	1.5	Loss of nitrogen and propane in tanks	5		1				1	
	3/2/2007	2.25	System maintenance	4		1	1				
	3/20/2007	4.5	System maintenance	4	1		1				
	3/22/2007	12.5	Unknown cause for shutdown	5	1					1	
	3/25/2007	9	System maintenance	4	1		1				
	3/26/2007	11	Unknown cause for shutdown	5	1					1	
	4/25/2007	2	System maintenance	4		1	1				
	7/17/2007	7	Unknown cause of equipment shutdown	5	1					1	
	11/9/2007	2	Shutdown for elephant snout connection preparation	2		1		1			
	11/12/2007	1.5	Shutdown for GCCS to Energy Plant construction work	2		1		1			
	11/16/2007	1.5	Shutdown for pumping dome tank	2		1		1			
	11/26/2007	1.5	Shutdown for pumping dome tank	2		1		1			
	11/29/2007	2.5	Unknown cause of equipment shutdown	5		1				1	
	12/1/2007	38	Loss of power – utility down	1	1						1
	12/11/2007	4	Shutdown for WEC engine operation	2	1			1			
	12/18/2007	5.25	Shutdown for WEC engine operation	2	1			1			
	12/21/2007	7	Shutdown for WEC engine operation	2	1			1			
	12/26/2007	5.25	Shutdown for WEC engine operation	2	1			1			
	12/28/2007	3.5	Shutdown for WEC engine operation	2	1			1			
				Yearly Totals	12	8	4	9	0	5	2
					20		20				
				Yearly Percentage	60.00%	40.00%	20.00%	45.00%	0.00%	25.00%	10.00%

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TABLE 2

WINNEBAGO RECLAMATION SERVICE LANDFILL

NORTH LFG FLARE DOWNTIME EVENTS: 2007-2009

Date	Duration (hrs)	Reason for Downtime	Code		SSM>3 hrs.	SSM<3 hrs.	Flare Maintenance	GCCS Maintenance	WEC Outage	Malfunction	Other
3/3/2008	2.12	Engine No. 2 oil change and PM on engine and north blower skid	3	2008		1			1		
3/4/2008	2.62	Engine No. 2 shutdown due to failed ignition transformer on cylinder #18	3			1			1		
3/24/2008	3.5	Engine No. 2 shutdown due to low oil pressure	3		1				1		
4/26/2008	3	Engine No. 2 tripped after full load	3			1			1		
4/27/2008	1.33	Engine No. 2 shutdown due to due to uneven cylinder temperatures	3			1			1		
7/8/2008	1.28	Engine No. 2 shutdown for oil change	3			1			1		
7/10/2008	2.33	Engine Nos. 2, 3, 4 and 5 shutdown due to lightning	1			1					1
7/18/2008	6	Engine Nos. 2, 3, 4 and 5 shutdown due to lightning	1		1						1
7/31/2008	22.23	Engine Nos. 2, 3, 4 and 5 shutdown due to Com Ed Line R8701 had breaker trip and call out failed	1		1						1
8/3/2008	1.32	Engine Nos. 2, 3, 4 and 5 shutdown due to Com Ed Line R8701 had breaker trip and call out failed	1			1					1
8/4/2008	1.25	Engine Nos. 2, 3, 4 and 5 shutdown after engine breakers tripped	1			1					1
10/9/2008	2	Engine Nos. 3, 4 and 5 shutdown due to power line movement	3			1			1		
10/12/2008	1.02	Engine No. 2 shutdown due to breaker lockout	3			1			1		
10/16/2008	4.75	Engine No. 2 shutdown due to breaker lockout	3		1				1		
10/26/2008	11.5	Engine No. 2 shutdown due to clogging of jacket water pressure damper	3		1				1		
10/27/2008	1.33	Engine No. 2 shutdown due to spark plug and transformer failure	3			1			1		
11/2/2008	2	Engine No. 2 shutdown due to spark plug failure	3			1			1		
11/11/2008	2.17	Engine No. 2 shutdown due to cold cylinders	3			1			1		
11/12/2008	1.47	Engine No. 2 shutdown due to cold cylinders	3			1			1		
11/13/2008	2	Engine No. 2 shutdown to service the engine	3			1			1		
12/5/2008	2.83	Engine No. 2 shutdown due to frozen blower skid	3			1			1		
12/8/2008	1.5	Engine No. 2 shutdown for repair to blower skid	3			1			1		
12/26/2008	7	Engine No. 2 shutdown due to frozen blower skid	3		1				1		
				Yearly Totals	6	17	0	0	18	0	5
					23				23		
				Yearly Percentage	26.09%	73.91%	0.00%	0.00%	78.26%	0.00%	21.74%

Shaw Shaw Environmental, Inc.

TABLE 2

WINNEBAGO RECLAMATION SERVICE LANDFILL

NORTH LFG FLARE DOWNTIME EVENTS: 2007-2009

Date	Duration (hrs)	Reason for Downtime	Code	Year	SSM>3 hrs.	SSM<3 hrs.	Flare Maintenance	GCCS Maintenance	WEC Outage	Malfunction	Other
1/6/2009	5.67	Engine No. 2 shutdown due to low aftercooler level and damaged batteries	3	2009	1				1		
1/7/2009	17.25	Engine No. 2 shutdown due to low aftercooler level and damaged batteries	3		1				1		
1/17/2009	2.5	Engine No. 2 shutdown due to overspeed	3			1			1		
1/29/2009	1.5	Engine No. 2 shutdown due to cold cylinders	3			1			1		
2/7/2009	1.25	Engine No. 2 shutdown for maintenance	3			1			1		
2/10/2009	1.5	Engine No. 2 shutdown to repair cracked oil pipe on gas booster	3			1			1		
2/24/2009	1.42	Engine No. 2 shutdown due to overspeed	3			1			1		
2/26/2009	2.25	Engine Nos. 2, 3, 4 and 5 shutdown due to loss of power	1			1					1
3/4/2009	20.92	Engine No. 2 shutdown due to cold cylinder #15	3		1				1		
3/9/2009	1.25	Engine No. 2 shutdown for overhaul	3			1			1		
3/18/2009	1.5	Engine No. 2 shutdown due to high oxygen in gas	2			1		1			
3/26/2009	2.92	Engine No. 2 shutdown due to engine overload	3			1			1		
4/14/2009	1.57	Engine No. 2 shutdown due to low oil level	3			1			1		
4/26/2009	1.08	Engine Nos. 2, 3, 4 and 5 shutdown due to Code 47 on south gas booster	5			1				1	
4/27/2009	2.5	Engine No. 2 shutdown for maintenance	3			1			1		
5/14/2009	1.83	Engine No. 2 shutdown for wellfield work	2			1		1			
5/21/2009	1.08	Engine No. 2 shutdown due to low oil level	3			1			1		
6/8/2009	1.75	Engine No. 2 shutdown due to water pump failure	3			1			1		
6/8/2009	3.3	Engine No. 2 shutdown to service spark plugs	3		1				1		
6/17/2009	1.42	Engine No. 2 shutdown for service and high point venting	3			1			1		
				Yearly Totals	4	16	0	2	16	1	1
					20		20				
				Yearly Percentage	20.00%	80.00%	0.00%	10.00%	80.00%	5.00%	5.00%

2007-2009 CUMULATIVE TOTALS					
63	4	11	34	6	8
	63				

Shaw Shaw Environmental, Inc.

TABLE 3
WINNEBAGO RECLAMATION SERVICE LANDFILL
SOUTH LFG FLARE DOWNTIME EVENTS: 2007-2009

2007

Date	Duration (hrs)	Reason for Downtime	Code	SSM>3 hrs.	SSM<3 hrs.	Flare Maintenance	GCCS Maintenance	WEC Outage	Malfunction	Other
2/7/2007	120	Condensate sump full	2	1			1			
2/13/2007	5	Condensate sump full	2	1			1			
2/17/2007	2.5	Condensate sump full	2		1		1			
2/19/2007	41.5	Installation of new condensate sump	2	1			1			
2/21/2007	48	Installation of new condensate sump	2	1			1			
3/2/2007	2.5	Routine maintenance	4		1	1				
3/16/2007	10	Maintenance of gas collection system	2	1			1			
3/18/2007	17.5	Blower belts broke	5	1					1	
3/26/2007	10.5	Unknown cause for shutdown	5	1					1	
7/17/2007	7.25	Loss of power – utility down	1	1						1
10/23/2007	1.25	Shutdown for GCCS construction	2		1		1			
11/7/2007	1.75	Shutdown for GCCS construction	2		1		1			
12/1/2007	32	Loss of power – utility down	1	1						1
12/21/2007	8	Shutdown for GCCS construction	2	1			1			
			Yearly Totals	10	4	1	9	0	2	2
				14		14				
			Yearly Percentage	71.43%	28.57%	7.14%	64.29%	0.00%	14.29%	14.29%

2008

Date	Duration (hrs)	Reason for Downtime	Code	SSM>3 hrs.	SSM<3 hrs.	Flare Maintenance	GCCS Maintenance	WEC Outage	Malfunction	Other
3/14/2008	2	Engine Nos. 3, 4, 5 shutdown due to South Unit blower damage caused by vibration	3		1			1		
3/22/2008	40.9	Engine Nos. 3, 4, 5 shutdown due to vibration causing pipe to break and seizing blower.	3	1				1		
9/20/2008	7	Engine Nos. 3, 4 and 5 shutdown due to power line movement	1	1						1
11/10/2008	1.5	Engine Nos. 3, 4 and 5 shutdown for repair to gas field	2		1		1			
11/11/2008	1.75	Engine Nos. 3, 4 and 5 shutdown for repair to gas field	2		1		1			
12/8/2008	3.5	Engine Nos. 3, 4 and 5 shutdown for repair to blower skid	3	1				1		
			Yearly Totals	3	3	0	2	3	0	1
				6		6				
			Yearly Percentage	50.00%	50.00%	0.00%	33.33%	50.00%	0.00%	16.67%

2009

Date	Duration (hrs)	Reason for Downtime	Code	SSM>3 hrs.	SSM<3 hrs.	Flare Maintenance	GCCS Maintenance	WEC Outage	Malfunction	Other
1/31/2009	36.08	Engine Nos. 2, 3, 4 and 5 shutdown due to blow out of fuse in utility cabinet	5	1					1	
			Yearly Totals	1	0	0	0	0	1	0
				1		1				
			Yearly Percentage	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%

2007-2009 CUMULATIVE TOTALS

SSM		Flare Maintenance	GCCS Maintenance	WEC Outage	Malfunction	Other
21		1	11	3	3	3
		21				

ATTACHMENT 2

SWANA / NSWMA Letter (dated 11/7/2007)

Shaw®

SWANA
SOLID WASTE ASSOCIATION of North America

NSWMA

November 7, 2006

Submitted Via Electronic Mail and Posted to Docket
a-and-r-docket@epa.gov
Docket ID No. EPA-HQ-OAR-2003-0215
Air and Radiation Docket and Information Center
U.S. Environmental Protection Agency (6102T)
1200 Pennsylvania Ave., NW
Washington, DC 20460

Dear Ms. Rackley:

The Solid Waste Association of North America (SWANA) and National Solid Wastes Management Association (NSWMA) would like to express its appreciation to EPA for addressing a significant portion of the comments in a very constructive manner as put forth in our comments on October 14, 2004 and subsequently discussed in our November 10, 2005 meeting. We are encouraged that EPA recognizes the unique nature of landfill operations as it relates to this proposed rulemaking and has structured the regulations to encourage energy recovery from landfill gas.

Our memberships, representing local governments and private sector members in the 50 states, are involved in all aspects of municipal solid waste management with particular expertise at operating landfills and associated landfill gas systems. SWANA and NSWMA have jointly developed the following comments in response to the proposed amendments to the Standards of Performance for Municipal Solid Waste Landfills (NSPS), to the Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills (EG), to the National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills (NESHAP) and to the Federal Plan Requirements for Municipal Solid Waste Landfills (GGG):

<u>Definition of MSW Landfill Owner / Operator, Definition of MSW Landfill Gas Collection, Control or Treatment System Owner / Operator and Allowance for Offsite Control or Treatment</u>

SWANA and NSWMA are pleased that EPA is structuring regulations to encourage energy recovery from landfill gas especially in light of the rising cost of fossil fuels. Beneficial use projects should be the ultimate landfill gas management goal. The constructive resolution of the "Third Party" issue has always been one of the more important issues facing the landfill industry because of the dampening effect unresolved liability could have on the beneficial use projects. We believe the current EPA proposal will go a long way to resolving this issue. The ability for owners and/or operators to continue to subdivide liability with respect to compliance with the NSPS/EG/GGG/NESHAP rules is consistent with historical practices and is a vital step forward for a workable regulatory approach. Comments presented here are meant to strengthen the proposed approach by indicating where in the proposal the goal for providing equitable divisions of compliance for multiple owner/operators, is not met.

In SWANA's July 2002 letter regarding third party operational issues, SWANA stressed the importance of providing the greatest level of flexibility to all MSW third parties. In that light, we recommended that third parties be given the option to certify that they would be willing to accept liability.

EPA's current proposed language uses a similar approach in requiring that all parties maintain a "list" that shows very specifically which aspects of the NSPS requirements each party is willing to comply with. We support this approach, however, SWANA and NSWMA must stress that the approach should be voluntary, not a requirement. If this approach is mandatory, then all existing landfills that have third party operations must establish a list of responsibility. The reality is that in many situations relationships between parties may not allow for that level of constructive dialogue. In fact, in a worst-case example, in the absence of substantive contracts a third party may find it advantageous not to cooperate since under the current proposed language, liability may default back to the landfill owner. In a best-case example, very solid contracts specifying compliance obligations between a landfill owner and the third party may be in place that negate the need for developing "list."; a mandatory obligation is just more "paper work." Having presented a "worst" and "best" case, we believe that there are many cases in between where this concept is workable. Once again, the goal of the proposed amendments should be to encourage beneficial use projects. We believe EPA should provide a host of options to achieve this end and recommend that EPA make the "list" approach voluntary.

We are encouraged by EPA's attempt to define gas collection and control system operating responsibilities through the proposed definition of *Municipal solid waste landfill gas collection, control, or treatment system owner/operator.* In order to further clarify the division of owner/operator compliance responsibilities, SWANA and NSWMA recommend that in Section 60.751 the proposed definition be replaced with three distinct definitions, as presented below:

> ***"landfill gas collection system owner/operator" means an entity that owns or operates any stationary equipment for the collection of landfill gas pursuant to §60.752(b)(2)(ii).***
>
> ***"landfill gas treatment system owner/operator" means an entity that purchases the landfill gas from the municipal solid waste landfill owner/operator and owns or operates any stationary equipment for the treatment of landfill gas pursuant to §60.752(b)(2)(iii)(D).***
>
> ***"landfill gas combustion system owner/operator" means an entity that purchases untreated landfill gas from the municipal solid waste landfill owner/operator and owns or operates any stationary equipment for the combustion of landfill gas.***

We also have a concern with the requirement, as outlined in §60.758 (g) and, §63.1980 (j) that *all entities involved are responsible for compliance with missing items*. It is the situation where *all* entities involved hold responsibility that the proposed amendments are trying to avoid. This leads to difficult contract disputes and legal bickering that eventually discourage third party developers from attempting to utilize landfill gas in a beneficial manner. We recommend that in the absence of the compliance list, liability remain with owner/operator of the affected equipment, as defined above. This provides incentive for all parties engaged in collection and control activities to complete a comprehensive list of compliance responsibilities for the affected MSW Landfill.

In §60.750 (a) and §62.14352 (g), if the MSW landfill and the associated gas collection, control and/or treatment system are under *common control*, the entity exercising such control is responsible for specified requirements. This language is contrary to the goal of clearly specifying who has liability for compliance. *Common control* is never clearly defined as it applies to the proposed regulations and can only add a significant level of ambiguity to the proposal. As stated above, it is the situation where *all* entities involved hold responsibility, that the proposed amendments are trying to avoid, yet the introduction of the concept of *common control*, as explained in the Preamble to the proposed regulation, does just that. More specifically, the Preamble states on page 53275 that:

> *It is important to note that in cases of common control, although the owner/operator of the single source (e.g., the owner/operator of the landfill and/or gas collection, control, and/or treatment system) is ultimately responsible for ensuring compliance at the source, enforcement action could be taken by EPA or a State against the owners/operators of individual affected sources/emission units in addition to the owner/operator of the single source.*

In the absence of any examples or explanations to the contrary, *common control* under this proposed wording, appears to provide EPA all the rights to take enforcement action against all entities owning or operating a source. If all landfill owners and operators are willing through a voluntary action establish a comprehensive list of compliance responsibly then issues of common control need not be considered. In addition, we believe that because of the ambiguous use of *common control* in the proposal individual EPA Regions may draw different interpretations on how to apply common control decisions. Once again, this is contrary to the need for clarity on NSPS liability with the goal to encourage beneficial projects. Therefore, we recommend all references to *common control* be removed to avoid confusion. EPA always has the authority to make common control decisions in any situation.

If EPA decides not to proceed with our recommendation, we suggest the EPA specifically state that "*separately owned and/or operated landfill gas control and/or treatment operations should not be considered to be under common control of the landfill owner/operator.*"

In the Preamble, EPA requests comment on two alternatives to the proposed approach. In both approaches, and much more so for Alternative #2, excess liability is placed on the landfill owner, while each individual source maintains its responsibility for compliance, as well as potential liability. In Alternative #1, for instance, it is proposed that in cases of *flagrant violations*, future liability shift back to the landfill owner/operator. The use of subjective terminology such as *flagrant* and even *minor* with regard to violations, bring uncertainty to contractual relationships and set the stage for abuse by both individual owner/operators and regulators. In Alternative #2, it is very clear that all parties will be held responsible for non-compliance with landfill owner/operators being held to the highest standard. As EPA correctly points out, *There are some concerns that this alternative approach could inhibit the beneficial use of landfill gas.* We agree, and strongly recommend that EPA not consider either alternative since both are counter to encouraging energy production from landfill gas.

<u>Landfill Gas Treatment Systems</u>
EPA has established a new definition for *Treatment* based upon contacts with manufacturers of combustion devices who provided fuel specifications. SWANA and NSWMA recommend that the *treatment* definition be modified to read:

> *Treatment system means a system that compresses the landfill gas, has an absolute filtration rating of 10 microns or less and achieves a degree of de-watering consistent with specifications for good combustion supplied by the manufacturer or supplier of the combustion equipment. Any treatment system for which a site-specific EPA or NSPS-delegated state or local agency applicability determination or written, or through a written*

> *Title V permit determination by a NSPS-delegated state or local agency has been issued that the treatment system satisfies 40 CFR 60.752(b)(2)(iii)(C) is deemed to meet this definition.*

SWANA and NSWMA recommend that all existing projects that have received written applicability determinations or approvals from EPA or delegated state/local authority that the existing treatment system meets 40 CFR §60.752(b)(2)(iii)(C) requirements as of the effective date of the final rule be exempt from any further action. In these cases, EPA has already evaluated the adequacy of the project's treatment system.

For new projects, or existing projects seeking to comply with 40 CFR §60.752(b)(2)(iii)(C), SWANA and NSWMA believe that the 20 degree dew point suppression is not practical for reasons described below. Therefore, in addition to revising the definition of treatment, SWANA and NSWMA recommend that manufacturer's/supplier's specifications for treatment be obtained by the gas treatment system owner/operator. Further, SWANA and NSWMA recommend that a site-specific preventive maintenance plan (PMP) be developed and included as part of the Start-up Shutdown and Malfunction Plan. Such PMP would be available on-site for agency inspection. The PMP would include provisions for periodic monitoring and recording of the gas treatment system operations to demonstrate proper operation in accordance with manufacturer's/supplier's specifications/standards. The periodic monitoring requirements for filtration should not be more stringent than weekly monitoring and recording of differential pressure to support appropriate preventive maintenance activities and to assure that a catastrophic failure of the treatment system is prevented. Compliance with the PMP would be used in lieu of any specified requirement for continuous monitoring and recording of treatment system parameters and would allow site-specific determination of the best procedure for achieving and monitoring treatment system performance as envisioned in the rule.

In support of our recommendations, it is important to understand that treatment system design and operation vary according to the type and size of the beneficial use project. Some engine facilities operate in cold climates where the landfill gas can be cooled from the wellhead to temperatures in the 40-degree range simply because of ambient conditions. In cases like this it is impossible to meet the proposed definition. Also, verifying the temperature is difficult because of varying inlet and outlet conditions that can vary depending upon the pressures in the system. Accounting for these conditions could require multiple points of measure plus an algorithm to determine compliance. In addition, a dew point suppression standard does not account for water removal that may be occurring in other parts of the gas collection system, such as in header lines where condensate is continually being collected. In fact, long pipeline runs may remove significant amount of liquid, perhaps even equivalent to that removed by active dew point suppression.

Operating data exists for boiler systems that confirms such systems have operated successfully for two decades, fully meeting all NSPS requirements with only minimal gas treatment, filtration and moisture separators. There are also numerous engine facilities operating around the country, many that have received EPA exemptions, that only use coalescing filters for moisture removal, compression, and air-to-air heat exchanges. Many of these facilities have source tested the combustion devices and have demonstrated compliance with the 98% destruction efficiency, or 20 ppm NMOC, as hexane NSPS requirements, with this level of treatment. SWANA and NSWMA can supply this data upon request from EPA. Other examples exist where gas sent offsite to an end user has only mechanical filtration and compression for moisture removal before entering a pipeline for transport to a local utility. In all these cases treatment is far less than a 20-degree dew point suppression.

From a developer, or landfill gas combustion system owner/operator perspective, it is important to realize that utilization of improperly treated landfill gas will result in potentially significant financial losses due to excessive equipment maintenance costs and downtime; this does not make business sense. Therefore, the level of treatment necessary for the efficient and long-term operation of the end use equipment should be determined on a case-by-case basis, based upon sound engineering. The real-world examples of landfill gas combustion equipment operating with treatment systems very different than what EPA proposes demonstrates that a "one size fits all" approach is not practical. Not only is it impractical, but also requiring existing projects to meet the proposed definition can be financially damaging to the industry, and most importantly, may be unnecessary.

1-Hour/5-Day Downtime of Gas Collection and Control Systems

SWANA and NSWMA support EPA's determination that a GCCS often cannot be reasonably brought back on-line after a downtime event in less than one hour. In fact during most downtime events it could take multiple days to return the GCCS to operating condition. We also support EPA's decision to clearly define that the 1-hour threshold should only be applied to free venting of LFG after a control device goes off-line and before the gas mover equipment can be shutdown to prevent untreated gas from passing through the control device.

However, we are concerned with language contained within the draft preamble, which seems to suggest that the current version of the NSPS does contain a 1-hour limit on control device downtime, regardless whether free venting is occurring. It has been the MSW landfill industry's position and interpretation since the original NSPS was promulgated in 1996 that the 1-hour threshold was always a free venting standard. This is particularly important to us since, as you know, there have been several enforcement actions filed under this 1-hour provision, and your preamble language would seem to suggest that those actions are viable and can be enforced until this rule change takes effect. SWANA and NSWMA, therefore, request that EPA revise the preamble language to clarify that the 1-hour standard was originally meant to be a free venting standard and that any other interpretation is inaccurate.

Further, §60.757(f)(3) of the NSPS rule still requires sites to report all instances where the control/treatment device was not operating for more than 1 hour. This appears to contradict the intent of §60.755(e) which eliminates the 1-hour requirement. Wording of §60.757(f)(3) should be revised to require reporting of all instances where free-venting of landfill gas occurred for more than 1 hour in duration.

With respect to the proposed elimination of the 5-day provision, SWANA and NSWMA are appreciative of EPA's efforts to give the landfills flexibility in determining a reasonable limit on total downtime for a GCCS through the SSM provisions of the NESHAPs rule. However, we are concerned that the proposed language would give too much discretion to state or local agencies in determining a maximum downtime limit, and those agencies could select something less than 5 days. The MSW landfill industry has always felt that 5 days is a reasonable maximum limit for GCCS downtime and are willing to commit to it as a regulatory threshold. Keeping the 5-day limit will ensure that there is a upper end time limit for downtime allowed under the rule, allow consistency across the country, and prevent state or local agencies from selecting shorter time frames, thereby eliminating the flexibility USEPA is trying to create.

As an alternative, SWANA and NSWMA would support the use of the SSM process for determining a maximum allowable downtime for a particular site as long as there is a provision in the rule which specifies that the allowable downtime cannot be less than 5 days.

On another note, in order to make the remainder of the NSPS regulations consistent with the removal of the 1-hour downtime limitation, the reporting section of the NSPS needs to be revised as follows:

> 40 CFR §60.757(f)(3): Description and duration of all periods when the control device or treatment system was not operating for a period exceeding one hour and length of time the control device or treatment system was not operating, ***only if the valves in the collection and control system contributing to venting of gas to the atmosphere were not closed within one hour.***

SSM Provisions

The proposed rulemaking makes several changes to the SSM provisions within the NESHAPs rule, beyond the 1-hour and 5-day requirements. One of these changes is the clear delineation that routine maintenance events should be included in the SSM plan. The MSW landfill industry has always believed that the SSM requirements include routine maintenance, so we do not take issue with your inclusion of this requirement in the rule. Because of this, it is unnecessary to require that a routine maintenance plan be added to each SSM plan, which has already been developed by MSW landfill owners/operators. Instead, making it clear that routine maintenance events are regulated SSM events should be sufficient for this rulemaking. Further, the industry already includes routine maintenance events in semi-annual SSM reports, so this change is unnecessary but acceptable to us.

The second change to the SSM requirements is the removal of the cross-referencing table to the NESHAPs general provisions (40 CFR Part 63, Subpart A) and replacement with all specific requirements contained within 40 CFR Part 63, Subpart AAAA. SWANA and NSWMA are supportive of this change as the cross-referencing element was always unclear and hard to follow.

The third change is described as a minor change to the block averaging requirement for 3-hour temperature values in the NESHAPs rule to be consistent with what is reportedly contained within the NSPS rule. This includes the removal of the allowance to exclude SSM events from the calculation of 3-hour block averages for determining compliance with the minimum temperature requirement under the NSPS. SWANA and NSWMA take serious issue with this requirement. Inclusion of SSM events in 3-hour block averages will lead to numerous temperature deviations due to low temperature at almost all landfills. When a control device goes off-line for SSM events the temperature will drop to ambient levels (versus operating levels over 1400 F for flares), and when this is averaged with any operating time, deviations will inevitably exist.

This would result in a temperature deviation for almost any SSM event of more than a few minutes in duration and leave us at the mercy of state and local regulators, who could take enforcement action regardless of whether our SSM plans were implemented or not. As an example, if a flare normally operates and is tested at 1500 ° F, then its minimum temperature for compliance would be 1450 ° F per the rule. During an SSM event, the flare temperature would drop quickly toward the ambient temperature of the surrounding area. It is not uncommon for flare temperatures to drop below 500 ° F within minutes. Assuming an SSM event of 10 minutes (common automatic restart cycle for many flares) and an average temperature during the SSM event of 500 ° F, the 3-hour block average including this SSM event would be 1444 ° F, which would be a deviation of the minimum temperature requirement. So, in this case, the flare could actually restart as it is designed to do, and yet a temperature deviation would still result. This is clearly an unworkable situation.

The MSW landfill industry has always viewed the NESHAPs rule language of exclusion of SSM events from the block average calculation as a clarification of unworkable rule language within the NSPS. With this proposed rulemaking, we would return to this unworkable situation for temperature calculations. As such, SWANA and NSWMA strongly request that the proposed rule be revised to continue to allow exclusion of SSM events for the 3-hour block average calculations for both the NSPS and NESHAPs rules.

Removal of GCCS Requirements for Closed Landfills

EPA requested comments on approaches for addressing removal of controls in closed landfill areas and specific criteria that could be applied to determine which areas warrant control and which may remove control. As stated succinctly in the preamble to the proposed rules, there are many situations in the landfill industry in which an old, closed portion of a landfill has been inappropriately drawn into the NSPS because of its location to an adjacent, newer facility. This can lead to problems when gas production in the older areas has fallen off so significantly that it is difficult if not impossible for this portion of the site to comply with the NSPS operational standards.

Further, many closed landfills installed gas collection and controls systems prior to the NSPS, EG and Federal GGG requirements. The current rule language states that the minimum 15-year duration for gas system operations begins with the date of the initial performance test required by the NSPS or EG/Federal GGG rules. For sites subject to the NSPS, initial performance tests of the control system likely occurred during December 1998 and June 1999. However, for the sites subject to either state/local EG rules or the Federal GGG Plan, the initial performance test dates occurred as late as October 2002 to April 2003. Typically closed landfills are subject to the state EG or Federal GGG requirements and not the NSPS requirements. Therefore at many closed sites the useful life of the equipment (i.e., 15 years) has already been surpassed.

There are several potential solutions to address declining gas flows and gas quality at closed landfills for consideration which include the following:

For a closed MSW landfill, not co-located with other landfill units (active or closed), the closed MSW landfill should be able to remove NSPS control requirements once the site demonstrates it emits less than 25 Mg/yr NMOC based on actual landfill gas flow in accordance with §60.754(b) irrespective of the age of the gas collection and control system. The 50 Mg/yr NMOC threshold should be maintained where sites can demonstrate 15-years of gas system operations in accordance with existing rule requirements. SWANA and NSWMA recommend that the NSPS (also applies to appropriate sections in the EG / GGG rules) rule language under 40 CFR 60.752(b) be revised as follows:

The collection and control system may be capped or removed provided that the conditions of paragraphs (b)(2)(v)(A), and either (B) or (C) are met:

(A) The landfill shall be a closed landfill as defined in § 60.751 of this subpart. A closure report shall be submitted to the Administrator as provided in § 60.757(d); and
(B) The collection and control system shall have been in operations a minimum of 15 years and following the procedures specified in § 60.754(b) of this subpart, the calculated NMOC gas produced by the landfill shall be less than 50 megagrams per year on three successive test dates. The test dates shall be no less than 90 days apart, and no more than 180 days apart; or
(C) For a closed landfill not co-located with other landfill units, follow the procedures specified in § 60.754(b) of this subpart, the calculated NMOC gas produced by the landfill shall be less than 25 megagrams per year on three successive test dates. The test dates shall be no less than 90 days apart, and no more than 180 days apart.

As for closed landfill units or areas co-located with active landfill units, several options exist within the confines of the existing rules. These include:

1) For a closed landfill unit or area co-located with active landfill units the site should be able to remove NSPS control requirements based on 15-years from the initial well installation date for the affected landfill or area, not the date of NSPS or EG performance test. This is similar to the language found in Ohio's EG program (OAC 3745-76-07(B)(2)(e)). The USEPA approved OEPA's EG program on October 6, 1998. 2) Include a provision for a 10% NMOC threshold for non-producing areas in order to address declining flows from closed landfill units or areas of an MSW landfill. The 10% NMOC threshold may be determined in accordance with 40 CFR §60.754(b) as gas collection is installed in these areas.
The non-producing area(s) would not be subject to monthly wellhead monitoring requirements or obligation to meet pressure, temperature and oxygen standards for wells located in the closed area(s). This proposed provision is ***in addition to the existing 1% NMOC threshold*** already provided for in 40 CFR §60.759(a)(3)(2) for non-producing areas without a gas collection system.
To demonstrate that the 10% threshold is still protective of the environment, the site would continue to conduct monthly cover integrity inspections and quarterly surface emissions monitoring. If readings above 500 ppm are not detected in non-producing area(s) after three consecutive quarters, then the site could defer to annual surface emissions monitoring as allowed in 40 CFR §60.756(f). If exceedance(s) are detected (above 500 ppm), then apply corrective actions in

accordance with 40 CFR §60.755(c)(4). The site would re-initiate quarterly monitoring until three consecutive quarterly events demonstrate no exceedances of 500 ppm standard. The site would then defer to annual monitoring as allowed in 40 CFR 60.756(f). Monthly cover integrity inspections and surface emissions monitoring would cease once the landfill met the following condition:

When a 1% NMOC threshold is achieved for non-producing area(s) as determined in accordance with 40 CFR 60.754(b).

Following are three case studies which illustrate the importance of developing options for addressing closed landfill areas.

Landfill A is located in a mountain region of the Western United States and has one older, closed area and one active area, which are physically separated on the landfill property. The overall site is subject to the NSPS and has a GCCS in place. Because the older area is such a large distance from the main active area and because of the poor quality of LFG from this area, the older area has its own separate GCCS with an activated carbon unit for a control device.

The older area can only generate approximately 30-35 scfm of LFG on a continuous basis with a methane content of 29-32 % on average (about 20 scfm at 50% methane). None of the wells in the older area can meet NSPS wellhead standards without an HOV allowance, and surface emissions have not been detected in this area, even before the GCCS was installed.

For the above reasons, it was felt that this older area of the site would be a good candidate for an exemption from having to operate a GCCS in compliance with the NSPS. However, the only option available under the rule was to demonstrate that the area's NMOC emissions were less than 1% of the total NMOC emissions for the site. When this analysis was completed using NSPS protocols, it was discovered that the older areas was still purportedly generating over 10% of the site-wide total for NMOCs and would not drop to 1% until the year 2050.

However, when the actual LFG flow data from this area is used to complete an NMOC emissions analysis, the percentage drops to 0.81 % in 2006. Clearly, with all of the above information, this area of the site should not be required to have a GCCS under the NSPS rule but the 1% threshold and the requirement to operate the GCCS for a minimum of 15 years prevents this exemption from being granted.

Landfill B is located in a desert region of the Southwestern United States and has one recently closed area and one active area, which are physically separated on the landfill property. The overall site is subject to the NSPS and has a GCCS in place for the recently closed area; the active area is not required to have control under the NSPS at this time.

The site was originally required to install a GCCS under the NSPS because of projected NMOC emissions of greater than 50 Mg/year using NSPS protocols. This was primarily due an extremely high NMOC concentration that was detected during a Tier 2 study. Since the GCCS has been installed, the site is only able to produce approximately 217 scfm of LFG on a continuous basis with a methane content of 29 % on average (about 126 scfm at 50% methane). Most of the wells at the site cannot meet NSPS wellhead standards without an HOV allowance, and no surface emissions have been detected, even before the GCCS was installed. Also, the amount of LFG at the site is not enough to continuously operate the LFG flare, so the GCCS is on a timer system with two hours of operation per day.

For the above reasons, it was felt that the NSPS applicability for this site should be re-evaluated, and a Tier 2 study was recently conduct using samples collected from the main header to the LFG system. These data are much more representative of the average NMOC concentration for the site (because the GCCS draws from the entire refuse volume) as compared to the previous Tier 2 study completed with the probe method where only the newer, uppermost waste could be sampled.

Using the new Tier 2 value, the site's NMOC emissions are projected to be less than 50 Mg/year for the landfill's entire life with the highest value being 21 Mg/year. In 2006, the NMOC emissions would be 14.1 Mg/year using NSPS protocols but only 0.36 Mg/year using actual LFG flow data from the site.

This site is another example of a landfill that should not be required to have a GCCS under the NSPS but the requirement to operate the GCCS for a minimum of 15 years prevents this from changing. The NSPS never established any provisions to allow a site that was incorrectly classified as requiring a GCCS to subsequently demonstrate that the emissions are less than 50 Mg/year and avoid the requirement without first operating for 15 years.

Landfill C received a small expansion in volume prior to its closure in 1993, and has been subject to the NSPS since promulgation of the regulations in 1996. The active gas collection system at the landfill was installed during closure activities in the 1990's. Collected gas is sent to a five engine plant. An open flare is available to provide backup control. Three gas compressors at the plant are the "gas mover" equipment. A utility flare is available as backup.

A site-specific NMOC sample was collected several years ago from this facility and based on existing gas flow rates and this concentration, the facility's NMOC emissions are well below the 50 Mg/year threshold. However, the USEPA denied a request to establish the "start date" for the gas system operations as when the first well was installed, vs. the date of the initial NSPS performance test, since the facility could not demonstrate that it had conducted all required

NSPS monitoring and recordkeeping from the date the gas system was installed (which was prior to the promulgation of the NSPS regulations). NSPS compliance at this facility has cost over $1,000,000 to date.

OTHER SPECIFIC COMMENTS:

Temperature Monitoring We agree that eliminating initial performance test for sources not of concern, such as the 44 megawatts boilers is a good simplification of the regulatory burden. This principle of not testing insignificant source should apply to small boilers or heaters as well.

Bioreactor Provisions SWANA and NSWMA support USEPA's clarification that the moisture content of the waste should be measured on a weight wet basis, which is consistent with how the industry already performs this calculation.

Definition of Household Waste - The definition of household waste needs to be expanded to not only exclude yard waste but also non-putrescible construction and demolition materials. There is a concern, for example, that roof shingle from a residential home could be deemed to make a construction and demolition landfill into a "municipal solid waste" landfill for NSPS purposes, and impose unnecessary and unduly expensive Title V permitting obligations on these facilities and result in enforcement action. Title V permitting for such facilities would potentially be required even though such facilities would not require gas collection and control systems, based solely on the size of the C&D landfill and the acceptance of a single roof shingle. If construction and demolition material from houses after a hurricane or other disaster are deemed to be "municipal waste", then C&D landfills would have a disincentive to accept such material because they would be unnecessarily subject to Title V permitting as a result of Landfill NSPS applicability. Given the public policy implications, the definition of household waste should specifically exclude non-putrescible construction and demolition materials.

Design Plan Approvals – We appreciate the EPA for addressing the issue of design plan approvals. The review and approval of the NSPS Design Plans has not been consistent from state to state, or even within the same state, from district to district. Some states have never approved design plans, even though we are now on the 10 year anniversary of the NSPS promulgation.

The agency's suggestion to allow landfills to have a "de facto" approval of their design plan after a certain time period has elapsed is an excellent option, and we support this.

With respect to the time frame for agency review of an initial design plan, the USEPA's February, 1999 document "Municipal Solid Waste Landfills, Volume 1:

Summary of the Requirements for the New Source Performance Standards and Emission Guidelines for Municipal Solid Waste Landfills" stated the following (on page 2-38):

> "The implementing agency must approve the design of a gas collection and control system prior to installation. The review and comment interval for approving a design plan is expected to take approximately 6 months from the date the plan is submitted, leaving approximately 12 months for installing the alternative gas collection and control system."

This six month timeframe for review and approval of the initial design plans is very reasonable, since it leaves at least one year for the landfill to prepare construction level drawings and specifications for the first phase of the approved design, as well as solicit bids, and ultimately install the system. Therefore, since the design plan has to be professionally designed and certified by a Professional Engineer along with ultimately achieving compliance through quarterly surface emissions monitoring and monthly testing and monitoring, we strongly support the De Facto approval of design plans if approval is not provided by the Administrator after 6 months of submittal.

With respect to time frames for updates or revisions to design plans, a four month time frame should be more than adequate, as the proposed revisions to an existing plan should require a less extensive review than a brand new plan prepared from scratch.

A related issue is the absence of consistent regulatory review and approval of higher operating value demonstrations, alternative timeline requests and well decommissioning requests. Some state agencies have established internal procedures to review and approve these requests on a timely basis, while other state agencies have no internal programs. The lack of response by an agency leaves a site in an awkward compliance position. If an alternative timeline as allowed in 40 CFR §60.755(a) and (c) is requested and no written response provided by the Agency, is the facility operating in or out of compliance with the NSPS? Because facilities have only two options for addressing wellhead and surface emission exceedances, i.e., expand the system within 120 days of the initial exceedance or seek approval for an alternative remedy/timeline, the facility could be considered out of compliance if the approval is never granted and the system is not expanded within the 120-day timeframe. Since expanding the system is not always the best way to correct an exceedance, and a facility may not be able to determine the appropriate course of action within 15 days of an initial well exceedance, we propose two different options to address these situations. One is to replace the 15-day timeframe with 60 days to address the initial exceedance prior to having to submit an alternative timeline request or decommission a well. Secondly if the well or area still exhibits an exceedance of the operating criteria which will occur for more than 60 days we believe that the

Administrator should have a much shorter timeframe to review the requests before a "de facto" approval would be allowed; i.e. 30 days. If the approval is not granted within an expeditious timeframe, it would leave little time to perform the expansion activity. Again, since the wellfield is required to be monitored monthly along with performing quarterly surface emissions monitoring we believe that the performance of the wellfield will not be impacted.

Cover penetrations - The third issue the EPA has asked for comment deals with surface monitoring locations and requests comment on the interpretation of cover penetrations. The EPA has taken the draft position that the quarterly monitoring path should include the monitoring of every cover penetration, since "cover penetrations can be observed visually and are clearly a place where gas would be escaping from the cover, so monitoring of them would be required by the regulatory language." We disagree with this interpretation.

To assume that all cover penetrations, including gas extraction wells, are a place where gas is escaping is unwarranted since the gas system is under vacuum. Also, it has been our experience that most cover penetrations do not leak, and therefore, there should not be a default assumption that they represent places where surface emissions are likely occurring. In addition, there are several facilities which are closed and are capped with a flexible membrane liner. This type of cover is very effective in not allowing gas to escape.

Further, if visual or other observations (e.g., breach in seal around penetration, desiccation of the cover material at the interface of penetration and the cover material, LFG odor in immediate vicinity, etc.) indicate possible elevated concentrations of landfill gas around cover penetrations in the solid waste area where the collection system is required those areas are currently being monitored as a part of the quarterly surface emissions testing.

The proposed requirement would be very difficult to perform at many landfills especially since there are landfills which have over 1,000 cover penetrations with only a small fraction of them potentially causing surface emissions. Therefore SWANA and NSWMA recommends the following rule changes as described below.

The Agency should clarify that any obligation to perform surface monitoring in the vicinity of a penetration of the landfill cap is limited to the area within the perimeter of the municipal waste disposal area. Second, any requirement to perform surface monitoring in the vicinity of a penetration in the cap should apply only where such penetration extends fully through the cap, rather than constitutes a surficial breach or inconsistency. This limitation would eliminate the need to automatically perform surface monitoring around survey poles, gas line or leachate line markers and other commonplace items that are intentionally placed within the cap but only within the top several inches of the surface. Third, the obligation to perform surface monitoring in the vicinity of a landfill cap penetration should not apply to gas collection wells or other components maintained under vacuum unless there are visible signs of a crack or breach in the seal around the penetration as noted above. Finally, we would like to point out the regulation for monitoring surface penetrations needs to be clear that monitoring is to be performed at the landfill surface (i.e. at a point within 5 to 10 cm of the surface).

Previous Request for Rule Clarification

A letter from SWANA dated October 14, 2004 detailed 22 issues within the NSPS rule where SWANA sought clarification. These issues were discussed with USEPA staff in a meeting on November 10, 2005, which was summarized in meeting notes dated, January 24, 2006. Several of these issues are covered in the draft rulemaking; however, others are not.

For the issues not addressed in the rulemaking, we hereby request that EPA either specifically cover those issues in the draft rulemaking or clarify in the preamble that certain issues will be handled in another manner, such as through applicability determinations or revisions to one of the guidance documents associated with the NSPS rule.

Thank you in advance for consideration of our views. We look forward to working with EPA on this very important issue and offer to meet with you to discuss these comments as part of the final rulemaking process. If you have any questions regarding these collective comments, please contact Mr. Frank Caponi, SWANA's Landfill Gas Technical Division Director at (562) 699-7411 x2460, or Mr. Ed Repa of NSWMA at 202-244-4700.

Respectfully submitted,

John H. Skinner

Bruce Parker

John H. Skinner, Ph.D.
SWANA Executive Director and CEO

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President and CEO NSWMA

ATTACHMENT 3

RK & Associates' Analysis

Shaw®

Summary of North Flare Maximum Hourly Emission Rates
Winnebago Reclamation Services - Winnebago Landfill - Rockford, Illinois

RKA reviewed monthly operations data for the North Flare for 2008 and 2009. The Winnebago Energy Center, which included a dedicated internal combustion engir for combustion of landfill gas from the North Unit, came on line in January 2008 and reduced the number of operating periods, as well as the total monthly flare operating hours.

Monthly flare operating data for 2008 and 2009 were reviewed to identify the maximum landfill gas flow rates measured by the gas flow meter at the inlet of the flare. The gas flow meter records the 15-minute average gas flow rate for each 15 minute increment during which the flare operated. The maximum 15-minute average flow rate recorded each month was assumed to be equal to the maximum hourly landfill gas flow rate and was used to estimate the maximum hourly SO_2emission rate for each month.

SO_2 emission calculations were performed using equations 3 and 4 of AP-42 Chapter 2.4 Municipal Solid Waste Landfills (10/98). Landfill gas sulfur content was determined using available monthly sulfur content analyses from the North Unit. Sulfur content from months for which no data was available was assumed to be equal to the average of the monthly data from the month immediately prior to and immediately following the missing data. In the absence of these data, the monthly average sulfur content was assumed to be equal to the maximum concentration measured from any month in 2008 or 2009.

The following table summarized the results. The calculated maximum hourly SO_2 emission rate of 1.09-lb/hr occurred in January 2009 at a landfill gas flow rate of 1,427-cfm and a total reduced sulfur concentration 80.8 ppm_v as H_2S. This flow rate is most likely an anomaly because it was significantly higher than any other 15-minute increment recorded over the two year period.

To further demonstrate that the 1.24-lb/hr SO2 emission limit was not exceeded, an example calculation was performed by combining the maximum gas flow rate an maximum total reduced sulfur concentration regardless of the month in which they occurred. This calculation is presented at the bottom the following table and show that the worst case SO_2 hourly emission rate from the North Flare could not have exceeded 1.21-bl/hr.

Unit	Year	Month	Analytical Date	Total TRS as H_2S ppmV	LFG Moist. (sat @70°F) % Vol (Moisture % vol: 2.81%)	Flare Peak LFG Flow scfm	Adjusted Flare Peak LFG Flow dscfm	Flare Control Efficiency (Cont. Eff: 98.00%)	Flare Flare S Loading lb/hr	Flare Peak SO2 Emis lb/hr (Limit: 1.24)	Actual Flare Monthly Op. Hours	Flare Peak SO2 Emis ton/month
North	2008	Jan	no test	85.00	2.81%	1,013	985	98%	0.41	0.82	64.00	0.0131
North	2008	Feb	no test	85.00	2.81%	598	581	98%	0.24	0.48	64.00	0.0154
North	2008	Mar	no test	85.00	2.81%	661	642	98%	0.27	0.53	64.00	0.0171
North	2008	April	no test	85.00	2.81%	666	647	98%	0.27	0.54	64.00	0.0172
North	2008	May	no test	85.00	2.81%	1,221	1,187	98%	0.49	0.98	64.00	0.0315
North	2008	June	no test	85.00	2.81%	-	-	98%	-	-	64.00	-
North	2008	July		85.00	2.81%	648	630	98%	0.26	0.52	64.00	0.0167
North	2008	Aug	no test	85.00	2.81%	616	599	98%	0.25	0.50	64.00	0.0159
North	2008	Sept	no test	85.00	2.81%	553	537	98%	0.22	0.45	64.00	0.0143
North	2008	Oct	no test	85.00	2.81%	897	872	98%	0.36	0.72	64.00	0.0231
North	2008	Nov	no test	85.00	2.81%	602	585	98%	0.24	0.49	64.00	0.0155
North	2008	Dec	no test	85.00	2.81%	463	450	98%	0.19	0.37	64.00	0.0119
North	2009	Jan	no test	80.80	2.81%	1,427	1,387	98%	0.55	1.09	64.00	0.0350
North	2009	Feb	no test	80.80	2.81%	727	707	98%	0.28	0.56	11.00	0.0031
North	2009	Mar	no test	80.80	2.81%	691	672	98%	0.26	0.53	118.75	0.0314
North	2009	April	04/29/2009	65.70	2.81%	811	788	98%	0.25	0.51	3.50	0.0009
North	2009	May	no test	83.00	2.81%	-	-	98%	-	-	-	-
North	2009	June	06/10/2009	83.00	2.81%	495	481	98%	0.19	0.39	17.50	0.0034
North	2009	July	no test	83.00	2.81%	428	416	98%	0.17	0.34	153.75	0.0259
North	2009	Aug	08/10/2009	74.30	2.81%	337	328	98%	0.12	0.24	3.50	0.0004
North	2009	Sept	09/22/2009	84.20	2.81%	387	376	98%	0.15	0.31	29.25	0.0045
North	2009	Oct	10/21/2009	83.50	2.81%	383	372	98%	0.15	0.30	32.50	0.0049
North	2009	Nov	11/24/2009	84.80	2.81%	407	396	98%	0.16	0.33	130.50	0.0214
North	2009	Dec	12/16/2009	80.80	2.81%	1,038	1,009	98%	0.40	0.80	6.50	0.0026
Max short term SO_2 Emission Rate				85.00	0.00%	1,427	1,427	100%	0.60	1.21		

worst case gas flow (wet) max TRS and 100% conversion of S to SO_2
N Flare has not exceeded permitted emission rate.

Eq. 3
Draft AP42;
Section 2.4 (10/08)
Page 2.4-7

English Units

$$Qp = \frac{Q_{LFG} \times C_p}{1 \times 10^6}$$

Q_p = emission rate of pollutant P ft^3/yr
Q_{LFG} = landfill gas flow rate ft^3/yr
C_p = concentration of pollutant in LFG - ppm$_v$
1×10^6 = conversion from ppm to volume

Metric Units

$$Qp = \frac{Q_{LFG} \times C_p}{1 \times 10^6}$$

Q_p = emission rate of pollutant P m^3/yr
Q_{LFG} = landfill gas flow rate m^3/yr
C_p = concentration of pollutant in LFG - ppm$_v$
1×10^6 = conversion from ppm to volume

Eq. 4
Draft AP42;
Section 2.4 (10/08)
Page 2.4-7

English Units:

$$UM_p = Q_p \times \frac{MW_p \times 1\ \text{atm}}{\frac{0.7302413\ \text{ft}^3\text{-atm}}{\text{lb-mole - °F}} \times \frac{2{,}000\ \text{lb}}{1\ \text{ton}} \times (460+T)}$$

UMp = uncontrolled mass of pollutant in raw LFG (tpy)
Q_p = emission rate of pollutant P ft^3/yr
MW_p = Molecular Weight of P (lb-mole)
T = Temperature of LFG, °F

Metric Units:

$$UM_p = Q_p \times \frac{MW_p \times 1\ \text{atm}}{\frac{8.205\times10^{-5}\ \text{m}^3\text{-atm}}{\text{lb-mole - °F}} \times \frac{1{,}000\ \text{grams}}{1\ \text{kg}} \times (273+T)}$$

UMp = uncontrolled mass of pollutant in raw LFG (kg/yr)
Q_p = emission rate of pollutant P m^3/yr
MW_p = Molecular Weight of P (g-mole)
T = Temperature of LFG, °C

ATTACHMENT 4

Articles on AG Lime

Shaw®

From BioCycle Magazine
March 1999, Page 68

COMPOSTING RESEARCH UPDATE

REDUCING ODOR AND VOC EMISSIONS

Research at a biosolids composting facility in Maryland studied the impact of lime addition before and after dewatering and the use of wood ash in odor reduction, as well as methods to reduce emission of VOCs.

The Montgomery County Regional Composting Facility (MCRCF) in Silver Spring, Maryland is designed to process 400 wet tons/day of lime amended biosolids from the Blue Plains Wastewater Treatment Plant (WWTP) in Washington, D.C. Recently, political pressures forced operations to cease at the MCRCF. Although the aerated static pile composting plant's fate has not been completely decided, its owner, the Washington Suburban Sanitary Commission (WSSC), began decommissioning the facility in February, 1999.

During the 15-plus years that the plant operated, it conducted some of the most comprehensive odor control and related research done in the industry. MCRCF received the U.S. Environmental Protection Agency's Beneficial Use of Biosolids Award four times, most recently in 1998 for Research Activities.

Over the years, MCRCF developed analytical techniques to measure reduced organic sulfur compounds, which are principally responsible for off-site odor complaints. It also developed odor monitoring and scrubbing technologies. The most recent research sought to discover the positive odor reductions that might be achieved by using a consistent and stable biosolids as feedstock for the composting process. It compared odor emissions from prelimed (before dewatering) biosolids to the postlimed biosolids the facility usually receives. The facility also recently conducted research on the odor reducing effect of adding wood ash to the biosolids/wood chip mixture and on methods for controlling and reducing odor and VOC emissions.

The following report on the most recent research was adapted from MCRCF's award nomination application submitted to EPA in 1998.

EFFECTS OF BIOSOLIDS STABILIZATION AND DEWATERING PROCESSES

Biosolids from the Blue Plains WWTP consist of primary and secondary sludge at a 1:1 ratio, which is stored at four to six percent solids for various periods of time. As a result, the primary solids are allowed to putrefy in storage to various states of stability. Lime is added just before and immediately after dewatering in an effort to reduce odors during the dewatering process and transportation to the MCRCF. However, lime addition is not always successful in controlling odor emissions, and the MCRCF often received batches of highly odorous biosolids. In addition, the postliming process is not uniform in mixture or lime content, and the heat of lime hydration raises the biosolids to high temperatures. Thus, the MCRCF receives biosolids in various states of temperature, putrefaction, and lime content. As a result, odor emissions from the biosolids, and subsequently from the composting process, have been highly variable.

To study the impact that a more consistent and stable biosolids product might have on odor emissions, the MCRCF received prelimed biosolids from the Piscataway (Maryland) WWTP for two months. The biosolids consist of approximately 60 percent primary sludge and 40 percent waste activated sludge (WAS). The liquid primary sludge and WAS are stored in gravity thickeners for at least two hours at pH 12. Lime and ferric chloride are added to the stabilized mixture just before it is dewatered with vacuum filter presses. The prelime stabilization and vacuum filter press processes yield a very consistent and stabilized biosolids product. In addition, the heat of lime hydration occurs in the gravity thickeners. Thus, the biosolids were close to ambient temperature when they were discharged at the MCRCF.

The Piscataway solids were mixed with Blue Plains biosolids at a 1:1 volumetric ratio because there was an insufficient amount to fulfill the capacity of the MCRCF. Mixing the two sources reduced the differences in odor emissions. After 1.5 months of accepting Piscataway biosolids, the MCRCF staff and several environmental consulting engineers conducted comprehensive field sampling programs to assess the emissions of odor, ammonia, and reduced organic sulfur compounds from the facility due to the two different compositions of biosolids (biosolids from the Blue Plains WWTP only (BP) and the mixture of the two (PW/BP)). The sampling strategy included measuring the flux of odor, ammonia, and reduced sulfur compounds from the delivery trucks, mixer discharge (biosolids mixed with wood chips), 14-day static compost piles (nonventing and venting areas), breakdown compost piles, and the mixer building stack. All of these are area sources of emissions except the mixer stack.

MEASURING RESULTS

Because the biosolids receiving and mixing sources at the MCRCF were operated only four to eight hours/day and the composting piles and scrubbers emit 24 hours/day, mass emission rates must be used to compare the relative value of various sources to odor emissions. Mass emission rates (pounds of compound released per hour) of sulfur compounds and ammonia were calculated to account for the operational and spatial variability associated with composting facilities. Results of these comparisons are summarized in Table 1.

As shown at the top of Table 1, the raw BP biosolids sources (e.g. receiving trucks and fresh mixed compost) emitted approximately two times the quantities of dimethyl disulfide (DMDS), total reduced sulfur (TRS), and ammonia than samples from sources of raw biosolids from the BP/PW mixture. This correlates well to the 1:1 volumetric ratio of the BP/PW mixture. The higher emissions are probably due to the higher temperatures and putrefaction associated with the BP biosolids. Those were received at 94°F, while Piscataway biosolids were received at 63°F. However, Table 1 also shows that the active composting piles emitted much more odorous compounds than the raw biosolids receiving and transfer sources. Once again, the piles composed only of BP biosolids released higher concentrations of DMDS and TRS. This was especially true for samples taken from vent areas in the active composting piles. The vents are areas on the top of the piles where convective forces are greater than the vacuum forces created by the aeration system at the bottom of the pile. As a result, these vent areas have much higher temperatures than the bulk compost pile, and steam is emitted at the top of the pile. The steam carries much larger quantities of odorous compounds than other lower temperature area sources.

Table 1 also shows that sulfur emissions from the mixer stack and scrubber (point sources) are much greater than all the area sources. Again, BP biosolids were more odorous than the BP/PW mixture. This is supported by data collected with an on-line TRS monitor which is used to pace chemicals added to the three stage misting process gas scrubber (used at MCRCF to treat odorous air). TRS concentrations declined in the process gas as the proportion of Piscataway biosolids increased. Piscataway biosolids were first received at the MCRCF on April 4, 1998. From that point, the proportion of Piscataway biosolids increased to approximately 50 percent by the middle of May. Total tons of biosolids also increased from approximately 900 tons/week in March, 1998 to approximately 1,200 tons/week in May, 1998. Despite the increase in tons of biosolids processed, the average and peak TRS concentrations continued to decline (Figure 1). Peak TRS concentrations create the most operating problems for the existing scrubber because the chemicals must rapidly change as the TRS concentration changes. The peak TRS concentrations were reduced substantially with the inclusion of Piscataway biosolids and the scrubber became easier to operate at peak efficiency.

The objective of testing Piscataway biosolids at the MCRCF was to determine if sulfur and odor emissions could be reduced by receiving a consistent and more stable biosolids. The results convincingly show that DMDS and TRS emissions from all sources were significantly less with the BP/PW mixture. However, the olfactory odor data is not so convincing. Odor data for all sources, except the vented areas of the compost piles, show reductions associated with the inclusion of Piscataway biosolids. The odor data for the vented areas of the compost piles, however, show higher odor associated with the BP/PW biosolids mixture. The odor data were reviewed to determine why odor measurements did not follow the sulfur findings for the vented areas of the compost piles. Ammonia emissions from the compost pile vents increased with the inclusion of Piscataway biosolids. While the reason for increased ammonia for this source was not determined during the study, it is believed the ammonia emissions are not responsible for off-site odor. The area sources are not significant as shown in Table 1 and the scrubber achieves very high removal efficiencies for ammonia (>99 percent removal). This data shows that reduced sulfur data is much more useful for monitoring odor emissions from composting sources than olfactory odor data.

EFFECTS OF ADDING LIME AND WOOD ASH

The MCRCF undertook studies to determine the effects of changing lime doses in the biosolids on odor and methanol emissions. In addition, the use of wood ash was studied to determine if it could reduce emissions of both methanol and organic sulfurs. To obtain this data, the MCRCF designed and built bench-scale composters to test different biosolids, lime, and wood ash recipes. Process gas samples were collected and analyzed for reduced sulfur content and VOCs such as methanol, acetone, and methyl ethyl ketone (MEK).

Table 2 summarizes the results of two bench-scale experiments using a compost mixture of undigested biosolids and a 5:1 volumetric ratio of wood chips to wood ash. In summary, these experiments showed that lime is more effective than wood ash as a single amendment for controlling sulfur generation during the composting process. However, the addition of wood ash to limed biosolids appeared to further control the generation of sulfur compounds.

To verify the actual effectiveness of the lime and wood ash amendment combination, three full-scale tests were conducted. In each test, wood ash was added to limed biosolids (pH 12) at a reasonable volumetric ratio of 10:1, wood chips to wood ash, with the wood chips to biosolids at a volumetric ratio of 3:1. Overall, lime plus wood ash decreased the generation of sulfur compounds by 35 percent for the three tests.

To further investigate the chemical mechanisms responsible for reduced emissions resulting from increased pH and wood ash amendment, the following samples were taken: 1) Mixer discharge stack: Two samples were taken directly from the stack which pulls air from the sludge/wood chip mixers. One sample was untreated and the other was filtered through a cartridge containing wood ash; 2) Freshly mixed compost pile consisting of Blue Plains biosolids: Two samples were taken from a flux chamber situated over a fresh pile of compost mix. A sample was first drawn from the flux chamber and then a thin layer of wood ash was applied to the surface of the pile before taking the second sample; 3) Active composting pile vent (14-days into the composting cycle): Two samples were taken from a flux chamber situated over a vent area of an active composting pile consisting of a Piscataway/Blue Plains biosolids mixture. The first sample was collected directly from the flux chamber and the second was pulled through a cartridge of wood ash.

Table 3 summarizes the results for these samples, which were analyzed with a gas chromatograph located on site. For each of the three sources, the concentrations of both DMDS and TRS were reduced in the samples utilizing wood ash as filter or cover. Thus, it appears that wood ash quickly adsorbs these sulfur compounds. In contrast, the other highly volatile compounds analyzed for this study did not produce conclusive results regarding the capability of wood ash to reduce emissions. Therefore, adsorption appears to be the fundamental mechanism responsible for reduced sulfur emissions provided by wood ash.

VOC EMISSIONS AND CONTROLS

MCRCF is located in a serious ozone nonattainment area. As such, the Title V VOC emissions threshold for major sources in this area is 25 tons/year. In addition, the Title V threshold for any single hazardous air pollutants (HAP) in this area is 10 tons/year and 25 tons/year for total HAPs. VOC and HAP emission data for biosolids composting facilities are quite limited and highly variable. Therefore, the MCRCF could not estimate total VOC or HAP emissions based on literature sources and thus did not know if it was a major source of VOCs or HAPs under the Clean Air Act Amendments of 1990.

To determine its status under the Clean Air Act, the MCRCF decided to measure VOC and HAP emissions from its three major point sources (process gas scrubber, mixer discharge, and composting building exhaust fans). The VOC and HAP removal efficiency of the existing three stage misting scrubber also was tested. Air samples were taken from the process gas stream before and after the scrubber and from the composting building and mixer discharge stacks.

Measurements found that the scrubber emits the vast majority of VOCs compared to the biosolids/wood chip mixing facilities. In addition, it is evident that most of the VOC emissions in the scrubber inlet are condensable VOCs, which is not surprising because the temperature of the process gas is approximately 125°F and contains high boiling point by-products of biosolids composting. However, the scrubber is removing approximately 93 percent of total VOCs. Removal appears to be most effective for the condensable fraction of the VOCs. Very few low molecular weight, noncondensable VOCs are removed by the misting scrubber. This suggests that the condensable VOCs are condensing at the surface of the mist drops inside the scrubber. (However, the temperature of the process gas does not appreciably change as the gas proceeds through the scrubber.) This condensation is believed to be responsible for the high VOC removal efficiencies.

HAP analyses indicated that the composting buildings and biosolids/wood chip mixing facilities emit very few HAPs or VOCs. Only methanol and acetone were detected in samples taken from these facilities. However, the process gas entering and exiting the misting scrubber contained significant quantities of methanol, acetone, MEK, and high boiling point terpenes. These compounds are biological by-products of biosolids and wood chip degradation. Acetone and MEK are produced by ketosis, which occurs when insufficient oxygen is present to complete the Krebs cycle (also known as the citric acid cycle, a series of chemical reactions that occur within a cell and break down food molecules to produce energy). Methanol is produced by oxidation of wood chips at high temperatures. Methanol emissions at the MCRCF are higher than measured at other composting facilities. Bench-scale tests have shown the increased methanol emissions likely are due to the addition of lime to the BP biosolids before composting. The three stage misting scrubber has a low HAP removal efficiency due to the highly volatile nature of the HAP compounds found in composting emissions.

CONCLUSIONS

Recent research conducted at the MCRCF has once again advanced our understanding of odor and VOC emissions from biosolids and composting facilities. In particular, this research has produced the following conclusions:

•The use of a more consistent and stable biosolids as feedstock for the composting process will produce less organic sulfur emissions throughout the facility. Less sulfur and odor is generated in the receiving and transfer areas, less odor and sulfur is generated by the composting process, and the scrubber is therefore easier to operate. Overall, odor and sulfur emissions were reduced by more than 50 percent.

•Lime addition to biosolids reduces odor and sulfur emissions from the composting process. Since the composting process is the most significant source at the MCRCF, lime addition to the biosolids provides a large dividend in terms of overall odor and sulfur reduction. However, the method of adding lime affects odor emissions in the receiving and transfer sources. Prelime addition (lime addition before dewatering) produces a more consistent and lower temperature product. Therefore, prelimed biosolids will emit less odor and sulfur during receiving and transfer operations.

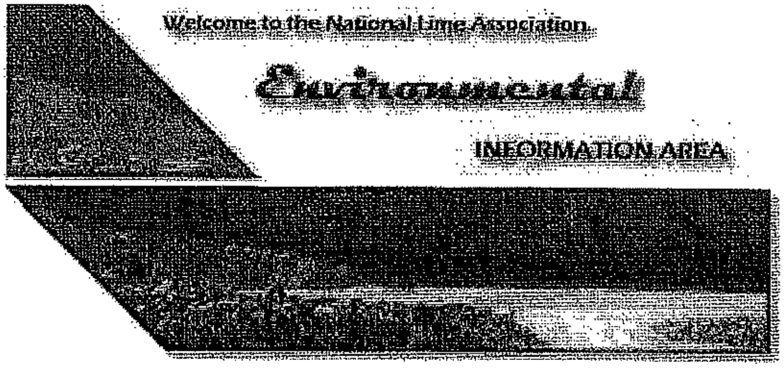
•Lime addition to biosolids increases methanol emissions from the composting process. High pH and temperature conditions in the active composting piles are conducive to pulping of the wood chips. Cellulose, lignin, and other wood-based sugars are extracted from the wood chips under these conditions. These compounds then serve as the precursors to methanol formation.

•The addition of wood ash to the biosolids/wood chip mixture reduces sulfur and odor emissions from the composting process. The wood ash probably adsorbs a portion of the sulfur compounds created in the composting process.

•Convection within aerated static composting piles can create "vented" areas that allow large quantities of odor and sulfur emissions to be emitted. To reduce these vent areas, the aeration system should be designed to overcome the convection forces.

•The existing three stage misting process gas scrubber is very efficient in removing high molecular weight, condensable organic compounds and inefficient in removing low molecular weight, noncondensable organic compounds. Since composting process gas consists of mostly high molecular weight, condensable organic compounds, the existing scrubber achieves high removal efficiency for total VOC removal. This phenomenon is not likely to occur in packed tower scrubbers.

This article was adapted from the Montgomery County Regional Composting Facility's beneficial use award nomination application submitted to the U.S. EPA in 1998.



USING LIME FOR FLUE GAS TREATMENT

- DRY LIME SCRUBBING
- WET LIME SCRUBBING
- COMPARING LIME AND LIMESTONE SO2 WET SCRUBBING PROCESSES
- HCl REMOVAL
- MERCURY REMOVAL

USING LIME TO TREAT BIOSOLIDS AND SLUDGES

- SEWAGE BIOSOLIDS
  - How Lime Treatment Works
  - Lime use can help meet EPA's Part 503 Requirements
  - The Part 503 regulations establish two classes
  - Lime-treated biosolids can be re-used
  - Lime use is cost-effective
- INDUSTRIAL SLUDGES AND PETROLEUM
  - Calcium sulfite/sulfate waste
  - Petroleum wastes

USING LIME TO TREAT ANIMAL WASTES

- The Animal Waste Problem
- EPA's CAFO rule
- Lime Treatment for Animal Wastes
- Lime Can Help Control Excess Nutrients
- Lime Can Help Control Pathogens
- Lime Can Help Control Odors
- Lime Treatment is Cost-Effective

USING LIME TO TREAT WASTEWATER

- Municipal Wastewater Treatment
- Industrial Wastewater

USING LIME TO TREAT DRINKING WATER

- Softening
- pH Adjustment/Coagulation
- Effect on Pathogen Growth
- Removal of Impurities

USING LIME FOR FLUE GAS TREATMENT

Lime plays a key role in many air pollution control applications. Lime is used to remove acidic gases, particularly sulfur dioxide (SO2) and hydrogen chloride (HCl), from flue gases. Lime-based technology is also being evaluated for the removal of mercury.

Lime is more reactive than limestone, and requires less capital equipment. SO2 removal efficiencies using lime scrubbers range from 95 to 99 percent (at electric generating plants). HCl removal efficiencies using lime range from 95 to 99 percent (at municipal waste-to-energy plants).

There are two main methods for the removal of acidic gases: dry scrubbing and wet scrubbing. Both methods are used for cleaning flue gases from the combustion of coal to produce electric power. Dry scrubbing is also used at municipal waste-to-energy plants and other industrial facilities, primarily for HCl control. Lime is used in both systems.

DRY LIME SCRUBBING: In dry scrubbing, lime is injected directly into flue gas to remove SO2 and HCl. There are two major dry processes: "dry injection" systems inject dry hydrated lime into the flue gas duct and "spray dryers" inject an atomized lime slurry into a separate vessel.

A spray dryer is typically shaped like a silo, with a cylindrical top and a cone bottom. Hot flue gas flows into the top. Lime slurry is sprayed through an atomizer (e.g., nozzles) into the cylinder near the top, where it absorbs SO2 and HCl. The water in the lime slurry is then evaporated by the hot gas. The scrubbed flue gas flows from the bottom of the cylindrical section through a horizontal duct. A portion of the dried unreacted lime and its reaction products fall to the bottom of the cone and are removed. The flue gas then flows to a particulate control device (e.g., a baghouse) to remove the remainder of the lime and reaction products.

Both dry injection and spray dryers yield a dry final product, collected in particulate control devices. At electric generating plants, dry scrubbing is used primarily for low-sulfur fuels. At municipal waste-to-energy plants, dry scrubbing is used for removal of SO2 and HCl. Dry scrubbing is also used at other industrial facilities for HCl control. Dry scrubbing methods have improved significantly in recent years, resulting in excellent removal efficiencies.

WET LIME SCRUBBING: In lime wet scrubbing, lime is added to water and the resulting slurry is sprayed into a flue gas scrubber. In a typical system, the gas to be cleaned enters the bottom of a cylinder-like tower and flows upward through a shower of lime slurry. The sulfur dioxide is absorbed into the spray and then precipitated as wet calcium sulfite. The sulfite can be converted to gypsum, a salable by-product. Wet scrubbing is used primarily for high-sulfur fuels and some low-sulfur fuels where high-efficiency sulfur dioxide removal is required. Wet scrubbing is a primary use for magnesium-enhanced lime (containing 3-8% magnesium oxide), which provides high alkalinity that increases SO2 removal capacity and reduces scaling potential.

COMPARING LIME AND LIMESTONE SO2 WET SCRUBBING PROCESSES: Over ninety percent of U.S. flue gas desulfurization (FGD) system capacity uses lime or limestone. This trend will likely continue into the next phase of federally mandated SO2 reduction from coal burning power plants. In 2003, the National Lime Association sponsored a study by Sargent and Lundy to compare the costs of leading lime and limestone-based FGD processes utilized by power generating plants in the United States. The study included developing conceptual designs with capital and O&M cost requirements using up-to-date performance criteria for the processes. The results of the study are summarized in two reports: Wet FGD Technology Evaluation and Dry FGD Technology Evaluation. The reports present the competitive position of wet and dry limestone and lime-based processes relative to reagent cost, auxiliary power cost, coal sulfur content, dispatch, capital cost, and by-product production (gypsum and SO3 aerosol mitigation chemicals), as summarized in technical paper presented in May 2003.

HCl REMOVAL: Because lime also reacts readily with other acid gases such as HCl, lime scrubbing is used to control HCl at other types of municipal and industrial facilities:

- At municipal waste-to-energy plants, dry lime scrubbing is used to control emissions from about 70 percent of the total U.S. capacity (as of 1998). HCl removal efficiencies using lime range from 95 to 99 percent.
- At secondary aluminum plants, for example, the U.S. Environmental Protection Agency identifies lime scrubbing as a maximum achievable control technology for HCl. EPA tests demonstrate removal efficiencies greater than 99 percent.

MERCURY REMOVAL: Many different methods for controlling mercury emissions are being evaluated in the U.S. One control technology being evaluated combines hydrated lime with activated carbon. The reagent, a registered product, consists of 95-97 percent lime and 3-5 percent activated carbon. Other calcium-based sorbents are also being evaluated as cost-effective alternatives for combined SO2 and mercury removal.

USING LIME TO TREAT BIOSOLIDS AND SLUDGES

Lime can be used for effective treatment of sewage biosolids, as well as industrial sludges and petroleum wastes.

Sewage Biosolids. Quicklime and calcium hydroxide (hydrated lime) have been used to treat biological organic wastes for more than 100 years. The treatment of human wastewater sludges (i.e., biosolids) by lime treatment is specifically prescribed in U.S. EPA regulations (40 C.F.R. 503). There are many examples of wastewater treatment systems using lime stabilization.

How Lime Treatment Works--Lime treatment controls the environment needed for the growth of pathogens in biosolids and converts sludge into a usable product. Lime stabilization is a cost-effective option that generally has lower capital costs than alternative treatment options. The mechanism of lime treatment of biological wastes is based on several chemical reactions:

- Calcium hydroxide is an alkaline compound that can create pH levels as high as 12.4. At pH levels greater than 12, the cell membranes of harmful pathogens are destroyed. The high pH also provides a vector attraction barrier, preventing flies and other insects from infecting the treated biological waste. Because lime has low solubility in water, lime molecules persist in biosolids. This helps to maintain the pH above 12 and prevent regrowth of pathogens.
- When quicklime (CaO) is used, an exothermic reaction with water occurs. This heat release can increase the temperature of the biological waste to 70°C, which provides effective pasteurization.
- The high pH also will precipitate most metals that are present in the waste and reduces their solubility and mobility. Lime will also react with phosphorus compounds.
- The solubility of calcium hydroxide also provides free calcium ions, which react and form complexes with odorous sulfur species such as hydrogen sulfide and organic mercaptans. Thus the biological waste odors are not >covered over= but actually destroyed.

- The addition of lime also increases the solids content of the waste, making it easier to handle and store.

Lime use can help meet EPA's Part 503 Requirements--EPA has established federal requirements for the safe treatment, beneficial use, and disposal of biosolids (40 CFR Part 503). For biosolids that are to be beneficially used, lime stabilization is one of the technologies identified to meet the requirements to address pathogens.

The Part 503 regulations establish two classes -- Class A and B -- that specify performance goals and the degree of treatment biosolids must receive before beneficial use or disposal:

- Class B biosolids contain higher pathogen concentrations than Class A, but have levels low enough for some beneficial uses, such as land application with restrictions. To meet Class B requirements using lime stabilization, the pH of the biosolids must be elevated to more than 12 for 2 hours and subsequently maintained at more than 11.5 for 22 hours.
- Class A biosolids contain extremely low pathogen concentrations and have few or no use restrictions. To meet Class A requirements using lime stabilization, the Class B elevated pH requirements are combined with elevated temperatures (70oC for 30 minutes) or other EPA-approved time/temperature processes.

In addition to regulating pathogen concentrations, the Part 503 regulations include requirements for reducing the tendency of biosolids to attract disease vectors such as rodents and insects. Lime treatment is one of the methods sanctioned in the regulations. To meet vector attraction reduction requirements using lime, the pH must be raised to 12 or higher for 2 hours and subsequently maintained above pH 11.5 for another 22 hours without further alkali addition. Most lime treatment facilities have the flexibility to produce either Class A or Class B biosolids, thus increasing disposal and recycling options.

Lime-treated biosolids can be re-used--Lime-treated biosolids are safe and promote recycling. As EPA notes, "properly prepared biosolids provide a rich source of the essential fertilizer elements needed by plants to produce food." U.S. EPA, "Biosolids Recycling: Beneficial Technology for a Better Environment," (June 1994). Reuse of lime-stabilized biosolids is not limited to use on farmland. Biosolids have also been used as a soil substitute for landfill cover, and in reclamation of mining-disabled land. Exceptional quality biosolids can also be sold for public use as a commercial fertilizer or soil conditioner.

Lime use is cost-effective--Lime stabilization is generally more cost-effective than alternative biosolids options. A series of studies comparing lime stabilization to composting, thermal drying, and digestion technologies found that lime stabilization has unit costs as much as 60 percent lower than alternatives. Reduced capital cost requirements of lime stabilization are even more dramatic – particularly important for municipalities with limited capital budgets. In general, lime stabilization is a non-proprietary process, although patented processes are available.

Industrial Sludges and Petroleum. Quicklime and hydrated lime can be used in the treatment of many industrial sludges by correcting pH for further treatment, neutralizing acidic wastes, and removing or immobilizing contaminants. Specific examples include sulfite/sulfate sludges and petroleum waste.

Calcium sulfite/sulfate waste--Calcium sulfite and sulfate wastes from desulfurizing stack gases, lime neutralization of acid waste effluent, and waste accumulated in the manufacture of superphosphate fertilizers, when untreated, are lacking in bearing strength and are prone to leach objectionable amounts of the sulfate ion into the ground water. However, this material, when mixed with 2-3% lime and 15-30% pozzolan--such as fly ash, volcanic ash, pulverized slag, etc.--develops considerable bearing strength, erosion resistance and is non-leaching. The stabilized material can be used in constructing embankments and earth dams. In addition, a synthetic gypsum can be crystallized from sulfite sludges from wet scrubbers. The gypsum produced from hydrated lime in this manner is very white and is a saleable product.

Petroleum wastes--Restoration of waste oil ponds to environmentally safe land for beneficial uses has been achieved using either commercial lime (mainly quicklime) or lime kiln dust. Either material is used to dewater the oily waste to the extent that the dried sludge can be compacted and the pond area converted to useful land.

USING LIME TO TREAT ANIMAL WASTES

The Animal Waste Problem--An emerging issue in the U.S. is the growing environmental threat caused by animal wastes. Current management practices have begun to create environmental problems because of the consolidation of the livestock industry into much larger facilities, and the resulting concentration of waste-producing activities. Concentrated animal feeding operations ("CAFOs") for beef cattle, swine, and poultry can create numerous problems, including excess nutrient loading of agricultural land, eutrophication of surface waters, groundwater contamination, pathogen release, and offensive odors. There have been a number of incidents in which large numbers of people have been sickened by water or food contaminated by animal wastes. These problems will only get worse—the amount of animal manure produced annually is estimated to be 10 times the amount of municipal sewage—and much of that manure currently receives little or no treatment. In addition to solid animal manure, there are large amounts of other animal wastes, such as poultry bedding, urine, and carcasses which also are environments problems and are estimated to total up to 100 times the amount of human wastewater biosolids.

EPA's CAFO rule—The Environmental Protection Agency is in the process of developing a new rule to regulate concentrated animal feeding operations. If the final rule resembles the proposed rule, many more of these 40,000 facilities will be required to institute effective treatment of animal wastes than presently do. When this happens, the need for cost-effective treatment methods will become acute.

Lime Treatment for Animal Wastes--Lime treatment is a multi-functional, cost-effective, politically acceptable option with respect to many of the challenges posed by animal wastes, just as it has played an important role in biosolids (sewage) treatment.

Lime Can Help Control Excess Nutrients—Animal wastes contain phosphorus and nitrogen, and these nutrients can be returned to the soil as fertilizer. However, the quantities of animal wastes produced means that there is an excess of these nutrients for the soil and crops to absorb, and runoff causes damaging eutrophication of surface waters. Lime will volatilize the nitrogen (and with the use of new technology, convert it into a usable concentrated fertilizer), and can precipitate the phosphorus to an insoluble form, reducing the excess nutrient problem. Lime can also be used to precipitate most metals that are present in the waste and reduce their mobility.

Lime Can Help Control Pathogens--Lime inhibits pathogens by controlling the environment required for bacterial growth. Calcium hydroxide (hydrated lime) is an alkaline compound that can create pH levels as high as 12.4. At pH levels greater than 12, the cell membranes of harmful pathogens are destroyed. The high pH also provides a vector attraction barrier (i.e., prevents flies and other insects from infecting the treated biological waste). Because lime has low solubility in water, lime molecules persist in biosolids. This helps to maintain the pH above12 and prevent regrowth of pathogens. In addition, when quicklime (calcium oxide, or CaO) is used, an exothermic reaction with water occurs. This heat release can increase the temperature of the biological waste to 70°C, which provides pasteurization and also helps dry out the solid waste.

Lime Can Help Control Odors--Lime treatment also reduces odors, particularly hydrogen sulfide, which is not only a nuance odor but also can be very dangerous if localized high concentrations build up. In addition to high pH, lime provides free calcium ions, which react and form complexes with odorous sulfur species such as hydrogen sulfide and organic mercaptans. Thus the biological waste odors are not 'covered over' but actually destroyed.

Lime Treatment is Cost-Effective--Lime treatment of animal wastes is economically attractive. For biosolids, lime treatment is often a least cost alternative—for example, unit treatment costs of lime stabilization of biosolids have been estimated to be less than half the costs of aerobic and anaerobic digestion. There are a number of innovative technologies that use lime or lime-derived materials to treat animal wastes and generate a usable agricultural product. Because of the versatility of lime it can be used for the treatment of most animal wastes, including hogs, cattle, dairy, and poultry.

USING LIME TO TREAT WASTEWATER

Lime is extensively used in the treatment of municipal wastewaters, as well as the treatment of industrial liquid wastes.

Municipal Wastewater Treatment. In advanced wastewater treatment plants, lime precipitation is employed in tertiary processes in which phosphorus is precipitated as complex calcium phosphates along with other suspended and dissolved solids. Due to the high pH of 10.5-11.0 maintained by lime, the stripping of nitrogen, another nutrient, is facilitated. Thus, the removal of phosphorus and nitrogen helps prevent eutrophication (algae build-up) in surface waters.

When alum and ferric chloride are employed for coagulation, lime is used to counteract the low pH induced by these acid salts and to provide the necessary alkalinity for efficient nitrogen removal.

In sewage plants where sewage sludge is removed by vacuum or pressure filtration, lime and ferric chloride are employed as filter aids in the conditioning of the sludge and for final clarification of the effluent.

Industrial Wastewater. Lime has numerous applications in treating industrial wastewaters, especially where neutralization of acidic wastes is required. In steel plants, sulfuric acid-based waste pickle liquors are neutralized with lime in which the iron salts are precipitated. Lime is also a neutralizer and precipitant of chrome, copper, and heavy metals in processes for treating discharges from plating plants.

Lime is used to neutralize sulfuric acid wastes from rayon plants and to neutralize and precipitate dissolved solids from wastes of cotton textile finishing plants (dye works).

Vegetable and fruit canning wastes can be clarified with lime alone or with supporting coagulants as an alternate to lagooning of the liquid waste. In citrus canning, lime assists in clarifying wastewaters and in the processing of citrus pulp by-products.

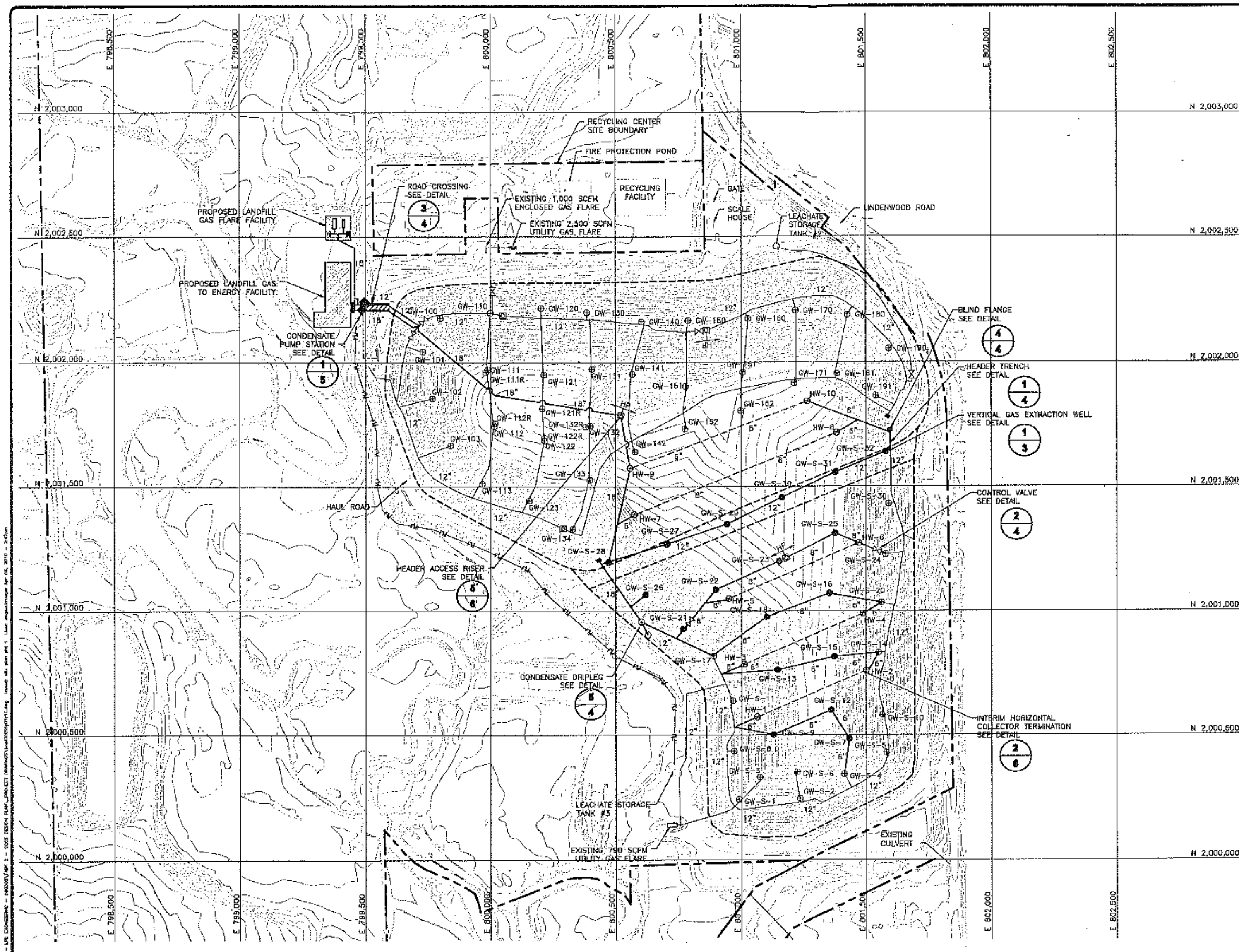
For a fact sheet on the use of lime to neutralize acidic wastewaters, see http://www.lime.org/ACIDNEUTfinal.pdf.

Acid Mine Drainage. Highly acidic drainage from active or abandoned mines is

ATTACHMENT 5

GCCS Plan Drawing

Shaw®



LEGEND

- PROPERTY BOUNDARY
- EXISTING SOLID WASTE BOUNDARY
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- 12" EXISTING LANDFILL GAS HEADER
- EXISTING 3"X6" LEACHATE FORCEMAIN
- GW-100 EXISTING LFG EXTRACTION WELL
- EXISTING HEADER ACCESS RISER
- EXISTING CONTROL VALVE
- EXISTING BLIND FLANGE
- EXISTING ROAD CROSSING
- HP EXISTING HEADER HIGH POINT
- 12" PROPOSED LANDFILL GAS HEADER
- PROPOSED LANDFILL GAS HORIZONTAL TRENCH
- PROPOSED CONDENSATE FORCEMAIN
- GW-S-7 PROPOSED LFG EXTRACTION WELL
- PROPOSED REMOTE WELLHEAD
- PROPOSED HEADER ACCESS RISER
- PROPOSED CONTROL VALVE
- PROPOSED BLIND FLANGE
- PROPOSED FLANGE CONNECTION
- PROPOSED REDUCER FITTING
- PROPOSED CONDENSATE DRIPLEG
- PROPOSED CONDENSATE PUMP STATION
- PROPOSED ROAD CROSSING
- HP PROPOSED HEADER HIGH POINT

NOTES:

1. LOCATION OF LANDFILL GAS MANAGEMENT COMPONENTS IS APPROXIMATE AND MAY VARY TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION. ALL HORIZONTAL AND VERTICAL DATUM TO BE VERIFIED PRIOR TO CONSTRUCTION.
2. ALL HEADER AND LATERAL PIPING WITHIN THE LIMITS OF WASTE TO BE INSTALLED AT A MINIMUM OF 3.0% SLOPE UNLESS OTHERWISE NOTED.
3. ALL HEADER AND LATERAL PIPING OUTSIDE THE LIMITS OF WASTE TO BE INSTALLED AT A MINIMUM OF 0.5% SLOPE UNLESS OTHERWISE NOTED.
4. EXISTING WELLHEADS IN THE SOUTH UNIT TO BE REPLACED WITH LANDTEC ACCU-FLO MODELS. SEE DETAIL 3 OF SHEET 2.
5. EXISTING UTILITY FLARES TO BE RELOCATED TO THE CENTRALIZED LANDFILL GAS TREATMENT AREA AS SHOWN.

GAS COLLECTION AND CONTROL SYSTEM

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
DATE OF ISSUE 04/10/07		DRAWN BY TSS DESIGNED BY AMK			CHECKED BY AMK APPROVED BY TAH	

CORNERSTONE Environmental Group, LLC

WINNEBAGO RECLAMATION SERVICE, INC.
WINNEBAGO LANDFILL
ROCKFORD, ILLINOIS

LANDFILL GAS
FINAL DEVELOPMENT SITE PLAN

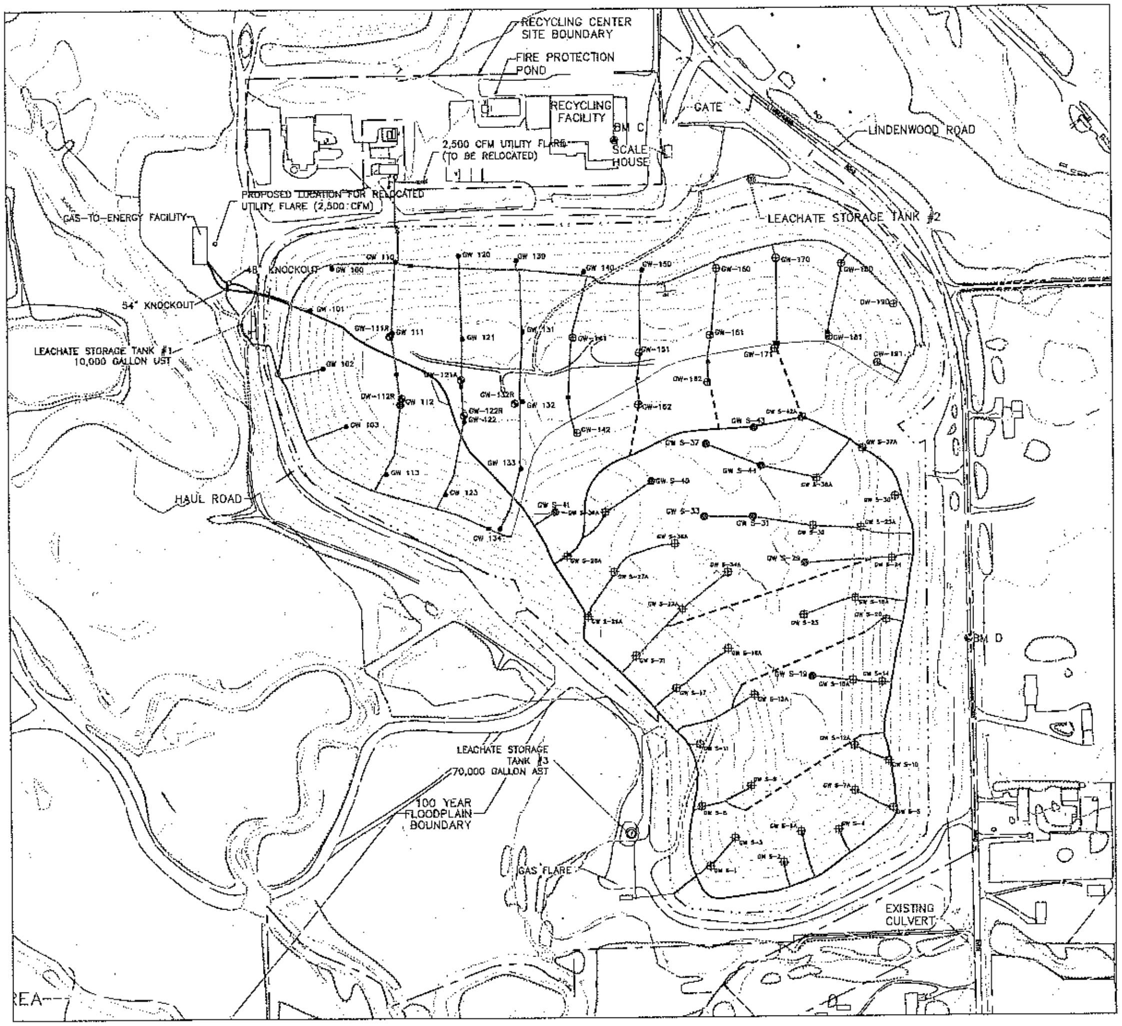
SHEET NO. 1

PROJECT NO. 060302

ATTACHMENT 6

GCCS As-Built

Shaw®



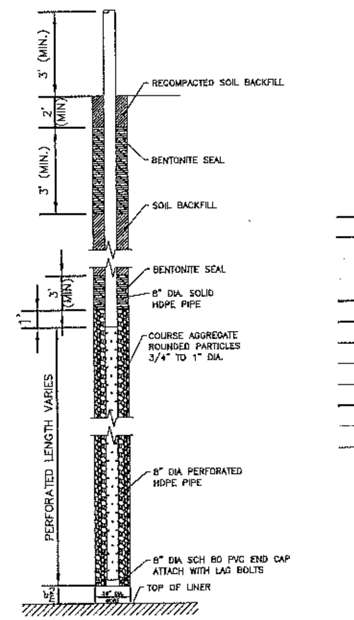
SOURCE:
THIS DRAWING WAS ADAPTED FROM THE "WINNEBAGO LANDFILL GAS EXTRACTION SYSTEM" DRAWING PREPARED BY FEEZOR ENGINEERING, INC. DATED FEBRUARY 2010.

GRAPHIC SCALE
400' 0 400'

GAS WELL	NORTHING	EASTING	AS-BUILT LINER ELEVATION	GROUND ELEVATION	WASTE DEPTH	BORING DEPTH	SOLID PIPE ABOVE GROUND	SOLID PIPE BELOW GROUND	PERFORATED PIPE
GW S-19	2,000,852.3	801,325.0	714.04	855.24	141.20	126.20	3	22	104.20
GW S-29	2,001,218.0	801,303.7	715.38	864.41	149.03	134.03	3	22	112.03
GW S-31	2,001,369.4	801,139.2	746.47	869.09	122.63	107.63	3	22	85.63
GW S-33	2,001,370.0	800,983.7	750.00	870.76	120.77	105.77	3	22	83.77
GW S-37	2,001,605.0	800,990.6	807.19	876.95	69.76	54.76	3	22	32.76
GW S-40	2,001,484.9	800,815.3	785.80	871.10	85.30	70.30	3	22	48.30
GW S-41	2,001,366.2	800,507.4	800.40	837.55	37.15	22.15	3	15	7.15
GW S-43	2,001,658.0	801,143.8	808.46	870.79	62.33	47.33	3	22	25.33
GW S-44	2,001,535.3	801,165.9	767.51	869.18	101.65	86.65	3	22	64.65

NOTES:

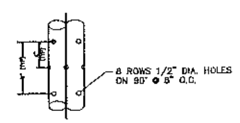
1) BASE MAP PROVIDED BY AEROMETRICS, INC. OF SHEBOYGAN, WISCONSIN. DATE OF TOPOGRAPHY NOVEMBER 25, 2003. SOUTH UNIT TOPOGRAPHY IS BASED ON DECEMBER 15, 2007 GROUND SURVEY BY ARNOLD LUNDGREN AND ASSOCIATES, INC. OF ROCKFORD, ILLINOIS.
2) CONTOUR INTERVAL PRESENTED IS 2 FEET.
3) FOR CLARITY, NOT ALL EXISTING LANDFILL FEATURES ARE SHOWN.
4) BENCHMARKS SHOWN ARE PROVIDED BY ARNOLD LUNDGREN AND ASSOCIATES, INC. OF ROCKFORD, ILLINOIS. ALL BENCHMARKS SHALL BE ESTABLISHED AND MAINTAINED BY A PROFESSIONAL LAND SURVEYOR.
5) THE APPROXIMATE 100 YEAR FLOODPLAIN BOUNDARY SHOWN IS BASED UPON INFORMATION PROVIDED BY THE ILLINOIS STATE WATER SURVEY AND THE APPLICABLE FEMA MAPS.
6) THE NORTHINGS AND EASTINGS ARE STATE PLANE COORDINATES WITH AN OFFSET OF N 2,000,000 E 800,000.



GAS EXTRACTION WELL DETAIL

LEGEND

- PROPERTY BOUNDARY
- WASTE BOUNDARY
- 10' TOPOGRAPHIC CONTOUR
- 2' TOPOGRAPHIC CONTOUR
- 18" GAS LINE
- 12" GAS LINE
- 8" GAS LINE
- 6" GAS LINE
- 4" GAS LINE
- HORIZONTAL COLLECTOR
- 2"x4" DUAL-CONTAINED CONDENSATE LINE
- KNOCKOUT DISCHARGE LINE
- EXISTING SOUTH UNIT GAS WELL
- NEWLY INSTALLED SOUTH UNIT GAS WELL



REV. NO.	DATE	DESCRIPTION

Winnebago Landfill

Shaw® Shaw Environmental, Inc.

WINNEBAGO LANDFILL
ROCKFORD, ILLINOIS

LANDFILL GAS EXTRACTION SYSTEM AS-BUILT

DRAWN BY: PEL | APPROVED BY: PCT | PROJ. NO.: 137863 | DATE: APRIL 2010

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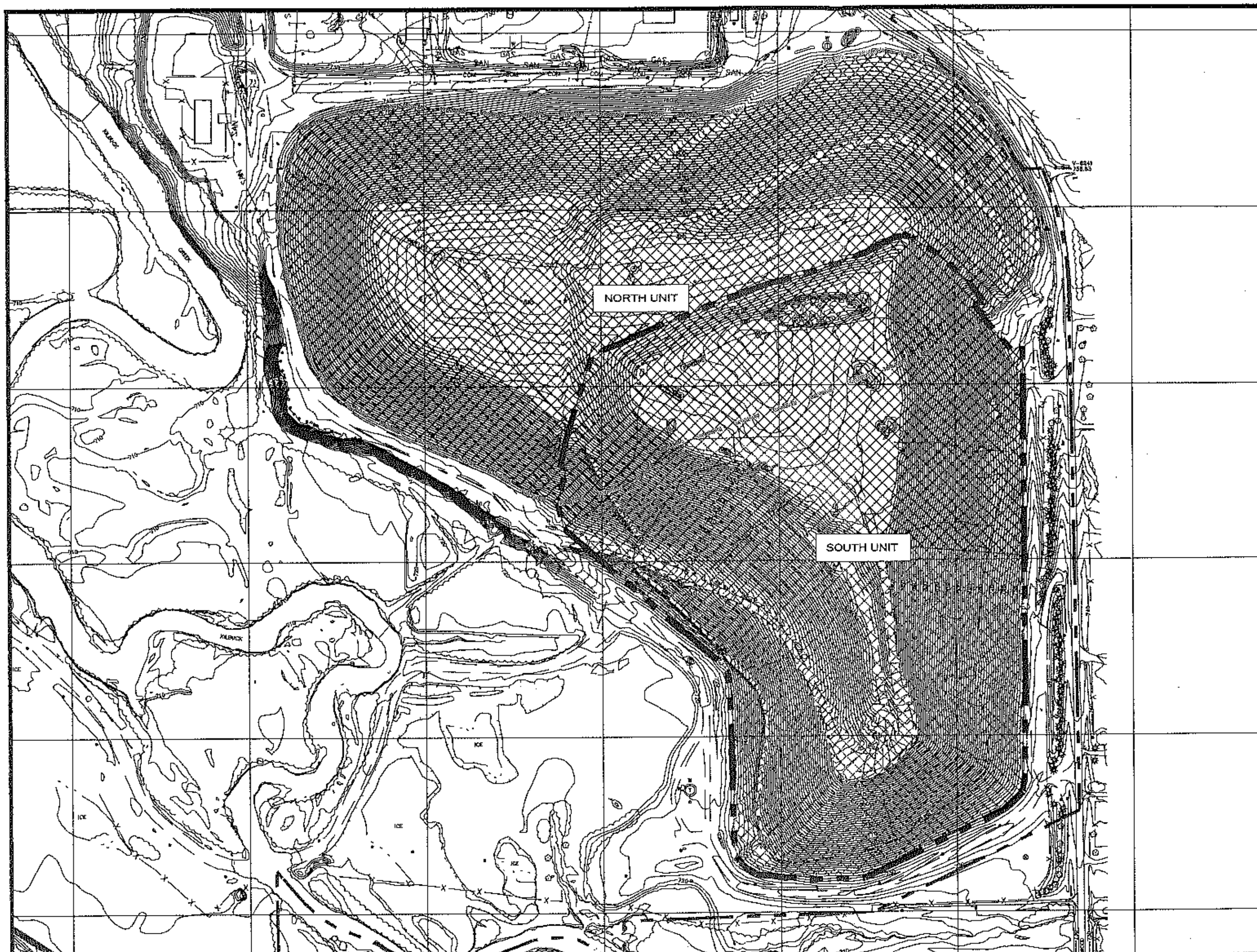
ATTACHMENT 7

Final Cover Phasing Plan



LEGEND

- APPROXIMATE FACILITY BOUNDARY
- APPROXIMATE NORTH UNIT WASTE BOUNDARY
- APPROXIMATE SOUTH UNIT WASTE BOUNDARY
- AREA WITH FINAL COVER INSTALLED (2000)
- 2010 FINAL COVER INSTALLATION AREA
- 2011 FINAL COVER INSTALLATION AREA

NOTES

1. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY AERO-METRIC, INC. ON 12/31/08.
2. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
3. CURRENT TOPOGRAPHY MAY DIFFER FROM THAT SHOWN.
4. THE 2010 FINAL COVER INSTALLATION AREA WAS OBTAINED FROM THE "WINNEBAGO LANDFILL SOUTH UNIT CLOSURE PHASE 1 CONSTRUCTION DRAWING," DATED 3/2/2010, PREPARED BY FEEZER ENGINEERING, INC.
5. HORIZONTAL DATUM BASED ON ILLINOIS STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD27.

REV. NO.	DATE	DESCRIPTION

Winnebago Landfill

Shaw® Shaw Environmental, Inc.

WINNEBAGO LANDFILL
ROCKFORD, ILLINOIS

FINAL COVER PHASING PLAN

DRAWN BY:	PEL	APPROVED BY:	PCT	PROJ. NO.:	137863	DATE:	APRIL 2010

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ATTACHMENT 8

Special Waste Acceptance Plan

Shaw®

SPECIAL WASTE ACCEPTANCE PLAN

All incoming waste received at the Winnebago Landfill will be observed to verify that it is acceptable in content and origin. Accurate and up to date records will be maintained of all waste accepted and all landfill operations.

Types of Waste Accepted

Waste accepted for disposal consists only of general municipal refuse, construction and demolition debris, and permitted non-hazardous special waste. A comprehensive load checking program has been developed to detect and eliminate the attempted disposal of unauthorized wastes. A detailed description of the load checking program is included later in the Operating Plan. The following is a list of wastes that will not be accepted for disposal at the existing and expanded Winnebago Landfill.

- ❑ Hazardous Waste (as defined by 35 Ill. Admin. Code 721);
- ❑ Radioactive Waste;
- ❑ PCB Waste;
- ❑ Bulk or Non-Containerized Liquid Wastes as restricted by 35 Ill. Admin. Code 811.107 (m)(1) and (m)(2);
- ❑ Potentially Infectious Medical Wastes (defined by 35 Ill. Admin. Code 1420.102);
- ❑ Lead-Acid Batteries;
- ❑ Landscape Waste;
- ❑ Tires, whole;
- ❑ White Goods; and
- ❑ Used Motor Oil.

Because the list of unauthorized wastes for Illinois landfills may vary occasionally, the Site Manager and operations personnel will be made aware of on-going acceptable waste classifications, as well as any modifications resulting from new legislation.

Special Waste

Special waste is managed in accordance with IEPA requirements. A sign has been placed at the entrance to the facility and conveys special waste disposal information required by IEPA regulations. Applicable requirements of special waste manifesting are accompanied by a special waste profile identification sheet from the waste generator. The sheet certifies to and contains all the information required by the IEPA. Subsequent shipments of special wastes from the same generator are accepted and documented in accordance with IEPA requirements. The required records of the management of special wastes will be retained at the facility until the end of the post-closure care period. More specifically, managements of special waste will occur as described in the following.

Notice to Generators and Transporters

In accordance with 35 IAC 811.402, a sign at the entrance of the facility states that disposal of hazardous waste is prohibited and the special waste is accepted only if accompanied by an identification record and manifest, unless such waste is exempted from the manifest requirements of 35 IAC 811, Subpart D.

Special Waste Manifests

Each special waste accepted for disposal at the facility is accompanied by a manifest containing the following information:

- ❑ Name of generator of special waste
- ❑ When and where the special waste was generated
- ❑ Name of the special waste transporter
- ❑ Name of the solid waste management facility to which it is shipped as a final destination point
- ❑ Delivery date
- ❑ Name, waste stream permit number (if applicable) and quantity of special waste delivered to the transporter
- ❑ Signature of the person who delivered the special waste to the special waste transporter, acknowledging such delivery
- ❑ Signature of the special waste transporter, acknowledging receipt of the special wastes
- ❑ The signature of the person who accepted the special waste at its final destination, acknowledging acceptance of the special waste.

The Winnebago Landfill will be designated as the final destination point for the special waste. Any subsequent delivery of the special waste or any portion or product thereof to a special waste transporter will be conducted under a transportation record initiated by the Winnebago Landfill.

The facility will only accept special waste if accompanied by three copies of the manifest from the hauler. The transporter shall retain one copy.

The receiving facility shall:

- ❑ Send one copy of the completed transportation record to the person who delivered the special waste to the special waste transporter (usually the generator, or another special waste management facility)
- ❑ Send one copy of each signed manifest to the Agency in accordance with the requirements of 35 Ill. Adm. Code 809
- ❑ Send information on rejected loads to the Agency in a quarterly report

Every person who delivers special waste to a special waste transporter, every person who accepts special waste from a special waste transporter and every special waste transporter shall retain a copy of the special waste transportation record for each special waste transaction. These copies shall be retained for three years, and shall be made available at reasonable times for inspection and photocopying by the Agency pursuant to Section 4(d) of the Act.

Identification Record

Each special waste disposed of at a facility (including special wastes generated at the facility) is accompanied by a special waste profile identification sheet, from the waste generator, that certifies the following:

- ❑ The generator's name and address
- ❑ The transporter's name and telephone number
- ❑ The name of the waste
- ❑ The process generating the waste
- ❑ Physical characteristics of waste (e.g., color, odor, solid or liquid, flash point);
- ❑ The chemical composition of the waste
- ❑ The metals content of the waste
- ❑ Hazardous characteristics (including identification of wastes deemed hazardous by the United States Environmental Protection Agency or the state)
- ❑ Presence of polychlorinated by biphenyls (PCB)s or 2,3,7,8-tetrachlorodibenzodioxin (2,3,7,8-TCDD)
- ❑ Any other information, such as the result of any test carried out in accordance with Section 811.202 that can be used to determine

  1. Whether the special waste is regulated as a hazardous waste, as defined at 35 Ill. Admin Code 721
  2. Whether the special waste is of a type that is permitted for or has been classified, in accordance with 35 Ill. Adm. Code 809, for storage, treatment, or disposal at the facility
  3. Whether the method of storage, treatment, or disposal, using the methods available at the facility, is appropriate for the waste

Special Waste Recertification

Each subsequent shipment of special waste from the same generator is accompanied by a transportation record in accordance with 35 Ill. Adm. Code 811.403 (b), copy of the original special waste profile identification sheet and either:

- ❑ A special waste recertification by the generator describing whether there have been changes in the following:

    1. Laboratory analysis (copies to be attached)

    2. Raw Material in the waste-generating process

    3. The waste-generating process itself

    4. The physical or hazardous characteristics of the waste

    5. New information on the human health effects of exposure to the waste, or

- ❑ Certification indicating that any change in the physical or hazardous characteristic of the waste is not sufficient to require a new special waste profile.

Recordkeeping Requirements

The solid waste management facility operator shall retain copies of any special waste profile identification sheets, special waste recertifications, certifications or representative sample, special waste laboratory analyses, special waste analysis plans, and any waivers of requirements (prohibitions, special waste management authorization, and operating requirements) at the facility until the end of the postclosure care period.

Declassification of Special Waste

On August 19, 1997, House Bill 2164 created Section 22.48 of the Illinois Environmental Protection Act to exclude certain nonliquid, nonhazardous industrial process wastes, and pollution control wastes from the definition of special waste, provided that generators certify that these wastes meet the following requirements:

- ❑ The waste material is nonliquid (as determined by paint-filter test SW-846 Method 9095) and is nonhazardous.

- ❑ The waste is not regulated asbestos-containing material as defined in 40 CFR 61.141.

- ❑ The waste does not contain polychlorinated biphenyls (PCBs) regulated in accordance with 40 CFR 761.

- ❑ The waste is not formerly a hazardous waste rendered nonhazardous.

- ❑ The waste is not a result of shredding recyclable material (e.g., auto fluff).

Additionally, each certification provided by a generator must include:

- ❑ A statement explaining how the generator determined the waste is neither hazardous nor liquid.

- ❑ A description of the process that generates the waste.

- ❑ Any relevant material safety data sheets.

- ❑ Results from analytical testing (signed and dated by the person who completed the analysis) or can explain why testing was not needed.

Certifications must be signed and retained by the generator for 3 years following termination of the process that generated the waste. Certifications must be provided when requested by the IEPA, the waste hauler, or the waste disposal facility. Certification allows qualifying nonliquid, nonhazardous industrial process waste and pollution control wastes to be transported as nonspecial waste to properly permitted disposal facilities without manifesting or using special waste haulers. Waste disposal facilities do not need special waste authorization to accept certified wastes.

Load Checking Program

A load checking program has been developed for the existing landfill and will be utilized throughout the life of the proposed expansion unit in order to detect and eliminate attempts to dispose of unauthorized wastes at the landfill. The formal load checking program will consist of 1) training employees for conducting load checking inspections, 2) conducting inspections at regular checkpoints, 3) random load inspections, 4) record-keeping and 5) guidelines for handling hazardous or unauthorized wastes. The following paragraphs describe these components of the load checking program in more detail.

Training

Any landfill employee involved with the load checking program will be required to be familiar with the list of unauthorized wastes and load checking procedures. Employees will be trained in the identification of unauthorized wastes, including familiarity with typical containers, markings, labels and placards that might aid in recognizing unauthorized wastes. Trained personnel will be provided with literature in this regard and will be required to remain familiar with any updated lists of unauthorized wastes. Periodic personnel meetings will be held to ensure that all staff members involved with the load checking program remain aware of waste acceptance criteria.

Regular Checkpoints

Informal load checking will be the responsibility of all employees, particularly those that work at the entrance area and those that work at or near the active fill area. Each employee will monitor vehicles entering the facility, watch for any potentially unauthorized waste, and will alert management personnel if any unauthorized wastes are suspected. For each load there will be several checkpoints:

- ❑ Curbside checkpoints - The hauler is notified at the facility on what materials are acceptable and which are unacceptable;

- ❑ Gatehouse checkpoints - Only authorized vehicles and material will be allowed beyond the gatehouse. The gate attendant will refuse entry to any unauthorized vehicles or vehicles observed carrying any unauthorized waste;

- ❑ Active face checkpoints - Material will be observed by the equipment operators as it is discharged at the active face; and

- Checkpoints during compaction at active face - Material will be inspected by the landfill compactor operator as it is compacted at the active face.

Random Inspections

Inspections will be conducted for a minimum of three random loads of solid waste delivered to the landfill on a random day each week or as approved by the IEPA. The Site Manager will designate an employee to be responsible for conducting the inspections. Trucks selected for random inspection will be directed to deposit their loads in a location near the active face where the inspection can occur without interfering with the active landfilling operations. Assuming no unauthorized waste materials are found during the inspection, the driver will be allowed to leave and the inspected waste material will be promptly moved to the fill face for proper disposal with other daily receipts.

In the event hazardous waste is discovered, the operator will also communicate with the generator, hauler or other party responsible for shipping the waste to the facility to determine the identity of the waste. In addition, wastes loads identical to the regulated hazardous waste identifies through the random load checking which have not yet been deposited in the landfill shall not be accepted. The party responsible for transporting the waste to the solid waste management facility will be responsible for the cost to properly clean up, transport and dispose of the material. Subsequent shipments by persons or sources found or suspected to be previously responsible for shipping regulated hazardous waste will be subject to the following special precautionary measures prior to the solid waste management facility accepting wastes. The operator shall use precautionary measures such as questioning the driver concerning the waste contents prior to discharge and visual inspection during the discharge of the load at the working face or elsewhere.

As discussed below, a record a all parties responsible for attempting to dispose of regulated hazardous waste will be maintain at the gate house. The record will contain the name of the hauling firm, vehicle license plate number, etc. and will be used by the gate house operator to identify those who have ben responsible or suspected of attempting to dispose of regulated hazardous waste.

Record Keeping

All incidents involving disposal regulated hazardous wastes, formal load inspections or other incidents will be documented in writing by the inspector and retained by the facility for a minimum of five years. At a minimum, the following information will be logged for each incident and formal inspection which takes place:

- Date and time of inspection;
- Name of the hauling firm;
- Name of the driver;
- Vehicle license plate number;
- Source of the waste as reported by the driver;
- Inspector observations; and
- Signatures of inspector and driver.

Handling of Unauthorized Wastes

If unauthorized wastes are discovered by the load checking program, then the operator will promptly notify the IEPA, the County, the person and/or company responsible for shipping the waste, and the waste generator, if known. If the unauthorized waste has not been unloaded, it will remain on the transportation vehicle. If the particular waste has already been unloaded, the deposit area (formal load inspection area) will be secured with temporary fencing (and containment berms as necessary) until arrangements can be made to contain and transport the waste to a licensed disposal facility by a licensed waste hauler. The landfill will coordinate the cleanup and removal of the waste, consulting with the IEPA and the generator during the process. A photographic and written record of the unauthorized waste incident will be made, with copies of the report placed in the landfill records.

ATTACHMENT 9

Accepted Waste Streams

Shaw®

Winnebago Landfill Tonnage History

MT		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
1	1-Household	203,421	226,566	211,512	218,279	233,147	251,262	261,237	265,810	186,770	6732.32	2,064,736
2	2-Contaminated Soil	3,494	4,130	1,302	237	114	2,954	1,468	27	1,504		15,230
3	3-HouseHold-Transfer							74,239	124,023	117,590	19	315,871
4	4-Oil Dry		119	387	303	417	279	91		265	102	1,963
5	5-Street Sweepings		201		4,029	5,510	6,600	8,383	7,975	6,713.00		39,412
7	7-POTW Sludge	77								267		344
8	8-Shingles			252	156					4		412
9	9-Drywall			660	967	926	869	275	168	64		3,929
10	10-C&D Recycling Res						88	163,622	284,971	115,873	134	564,689
11	11-2 Inch Minus Resi							946				946
12	12- CASH-HOUSEHOLD									1,137		1,137
13	13-Grease Skimmings		3									3
14	14-Screenings	13										13
15	15-Grit					362	347	580	246	279		1,813
16	16-Foundry Sand	27,563	25,521	26,881	31,287	36,935	39,381	35,199	32,354	21,829		276,951
17	17-Grinding Sludge	123	108	89	86	23	12	2	18	42		504
18	18-Lust Soil	11,334	5,984	3,387	2,791	1,370		332	792	1,341		27,332
19	19-DIE CAST SLUDGE				11		22		5,589	8		5,630
20	20-Industrial Water	273	78	28	1,273	2,147	4,180	4,830		2,349	60	15,219
21	21-Baghouse Dust (Wo											-
22	22-Baghouse Dust (St								12			12
23	23-Baghouse Dust (Me	195	211	195	244	304	308	176	167	19		1,819
24	24-Ash	16	14	5								34
26	26-Shredded ACM											-
28	28-Laundry Water Slu	54	208	122	98	172	191	187	166	189		1,387
29	29-Wood Block	40	28	1		2	31	3,450				3,552
30	30-Pipe Demolition											-
31	31-Buffing Compound	922	342				12					1,276
32	32-Sand Blast							425	41	58		524
33	33-Asphalt											-
34	34-Filters	6	0									7
35	35-Drums	9	14	4	20	30	29	41	26	72		246
37	37-Cash-Special											-
38	38-Asbestos	414	311	383	162	160	310	638	969	811		4,157
39	39-Demolition Debris	239	4,067	30,875	1,606	1,622	2,573	6,085	8,274	7,726		63,066
40	40-Trailers					26			41	10		77
41	41-Refractory Brick						121	1,445	1,653	1,558		4,777
43	43-AG LIME	20,464	26,316	26,092	25,264	32,525	33,195	12,437		6,777		183,070
44	44-pyr-demo		19			20						39
50	50-Salt Bath					15			0			15
	Total Reported Tonnage	268,657	294,243	302,175	286,813	315,828	342,764	576,087	733,320	473,254	7,048	3,600,190
Cover Material												
25	25-Dirt											-
27	27-Shredded ACM-NC							66,791	87,566	75,897	23	230,277
45	45-Clean Fill						1	14				15
46	46-Cover Soil				507		1					509
53	53-Yard Waste											-
54	54-Clean Fill - Smal									586		586
55	55-Clean Fill - Medi									2,708		2,708
56	56-Clean Fill - Larg									1,310		1,310
57	57-AWS Sawdust Mater									77		77
												-
160	160-PAPER MILL SLUDGE-ACM									99		99
161	161-GLASS RESIDUAL									1,786		1,786
163	163-COMPOST SCREEN MSW											-
200	200-Cover Material				3,395	6,206	2,162	7,041	22,986	44,393	15	86,199
	Cover Material	-	-	-	3,903	6,206	2,165	73,846	110,552	126,856	38	323,566
	Total Landfill Tonnage	268,657	294,243	302,175	290,716	322,035	344,929	649,934	843,872	600,110	7,086	3,830,991
	Pagel South	234,543	294,243	302,183	286,813	315,832	342,804	576,101	733,341	473,954	6,951	3,566,766
	Pagel North	34,114										34,114